

Fig.1

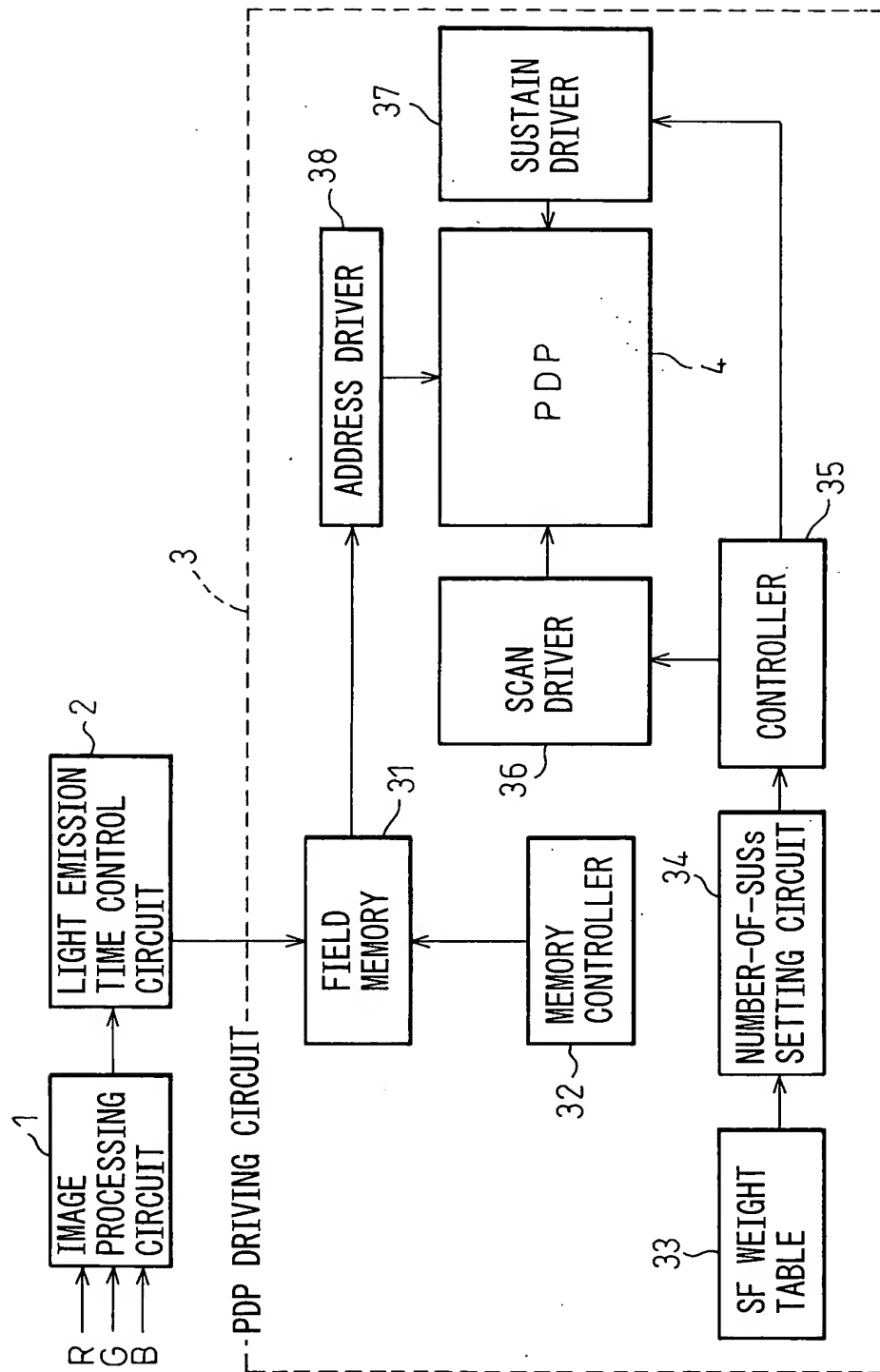


Fig.2
(PRIOR ART)

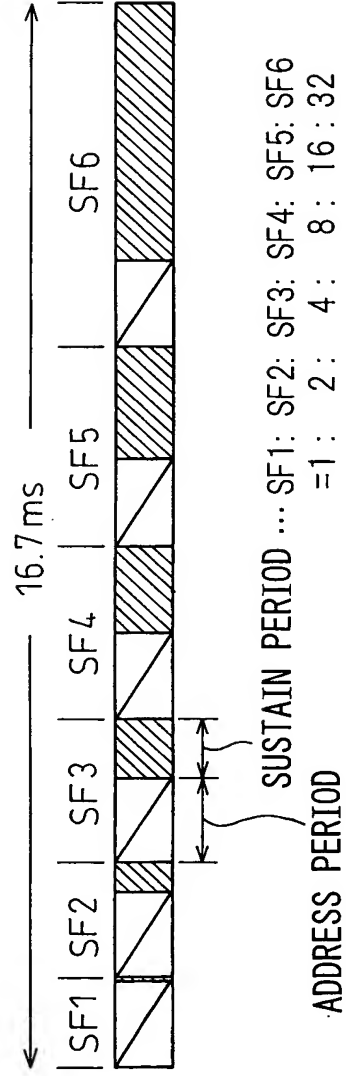


Fig.3

(PRIOR ART)

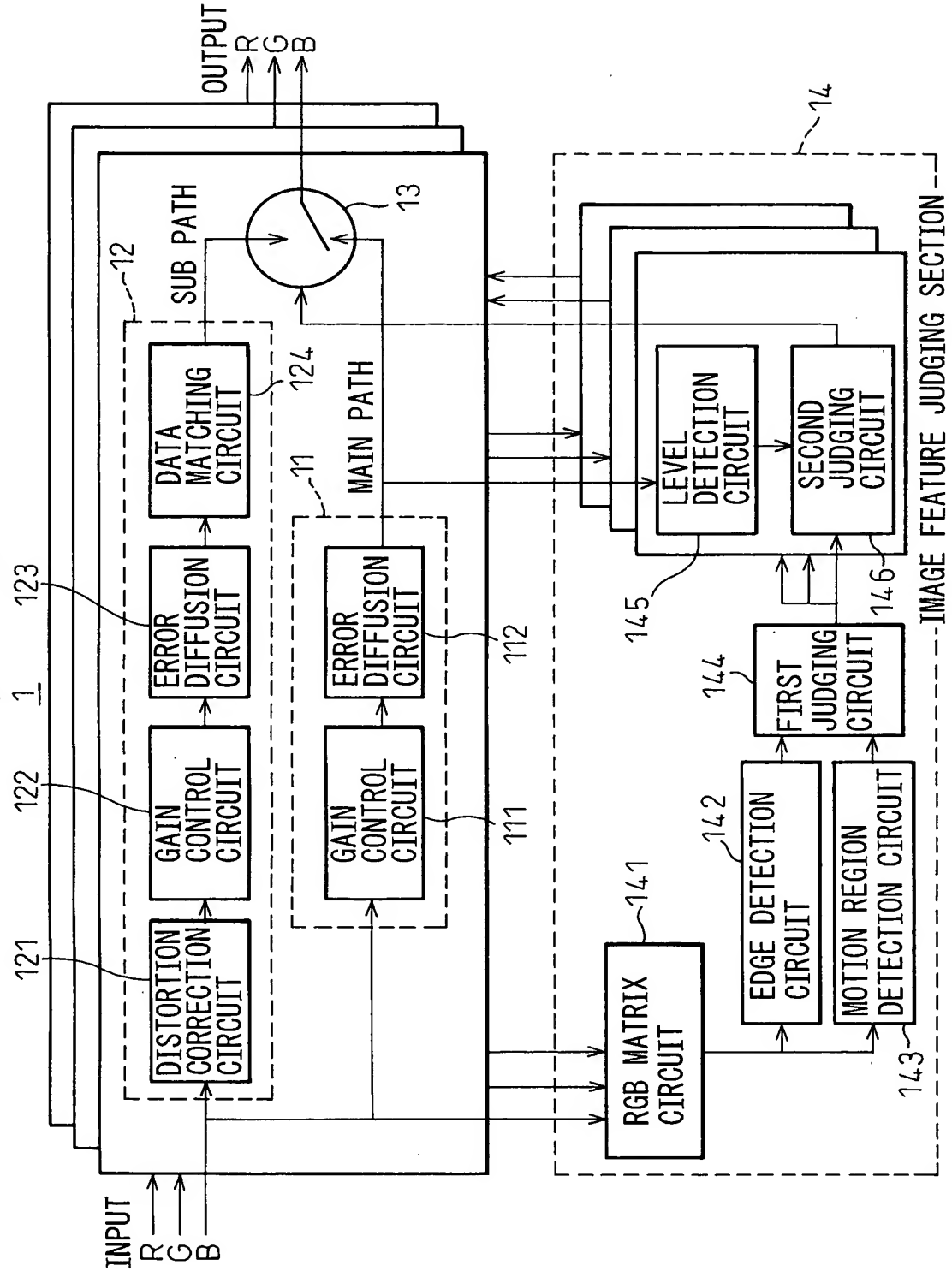
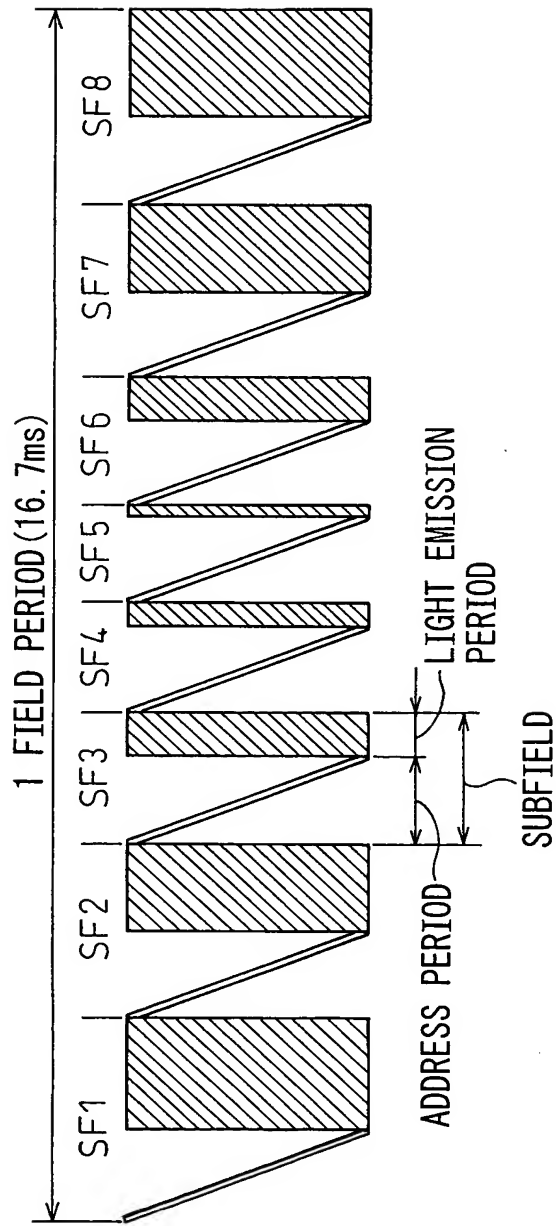


Fig. 4



SF1 : SF2 : SF3 : SF4 : SF5 : SF6 : SF7 : SF8
 = 12 : 8 : 4 : 2 : 1 : 4 : 8 : 12

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Fig.6

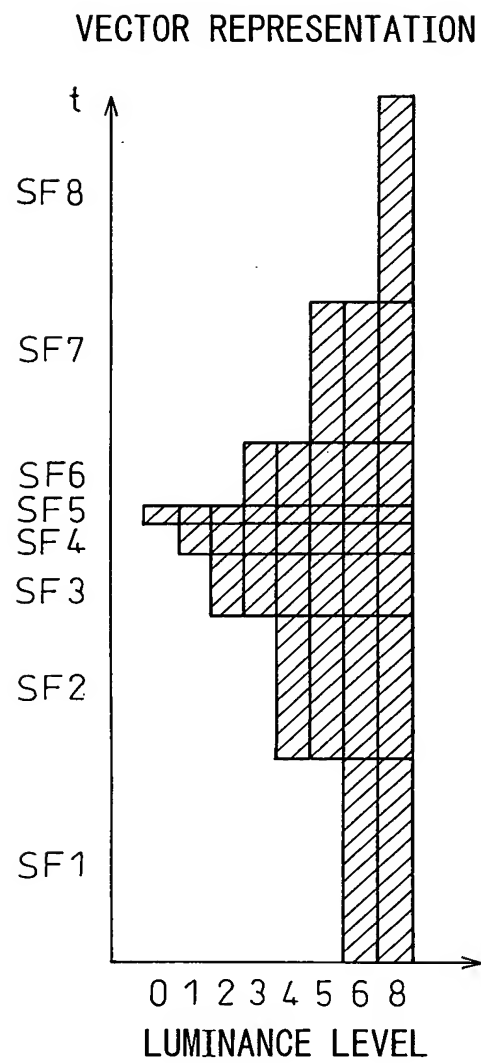


Fig. 7

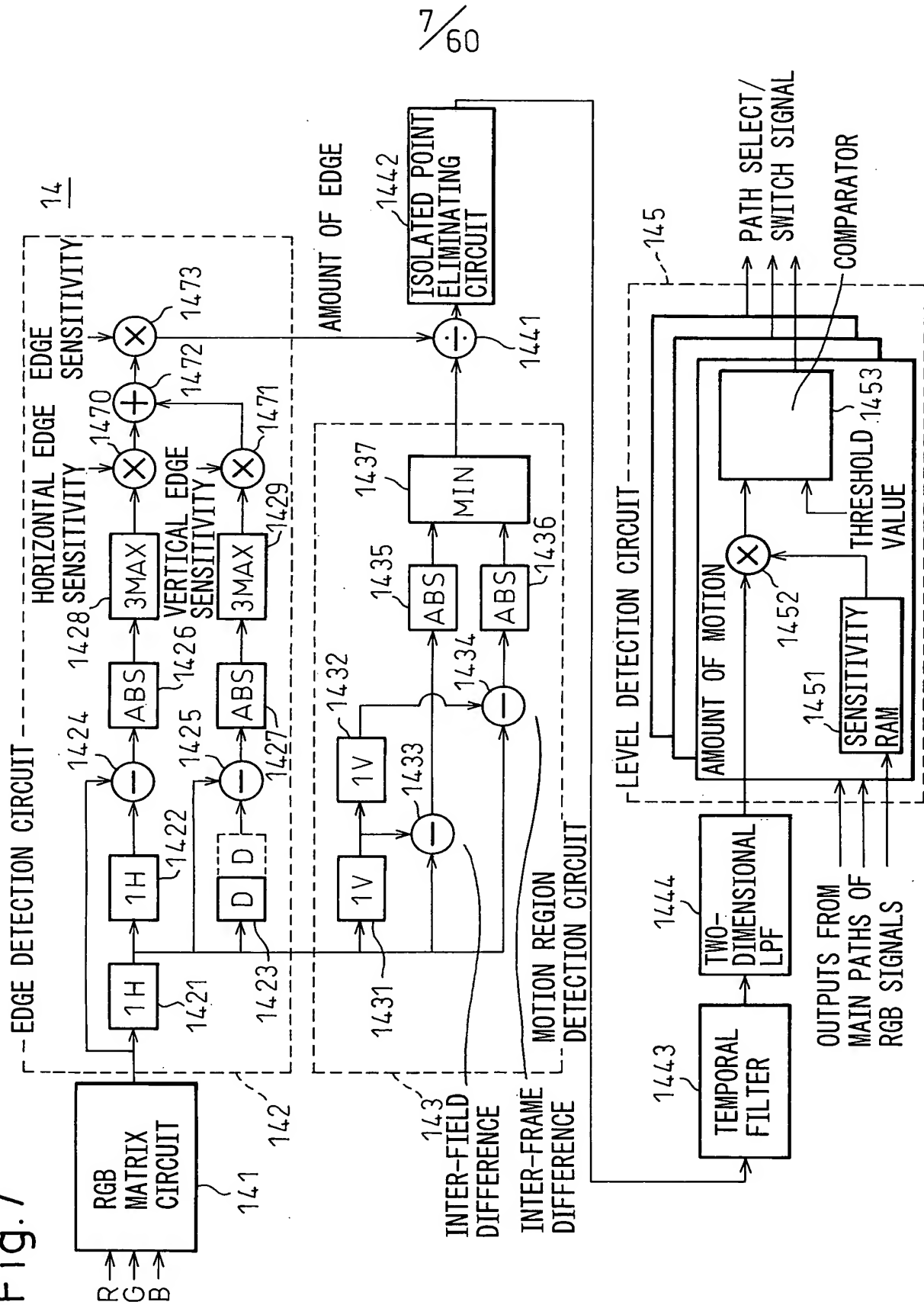
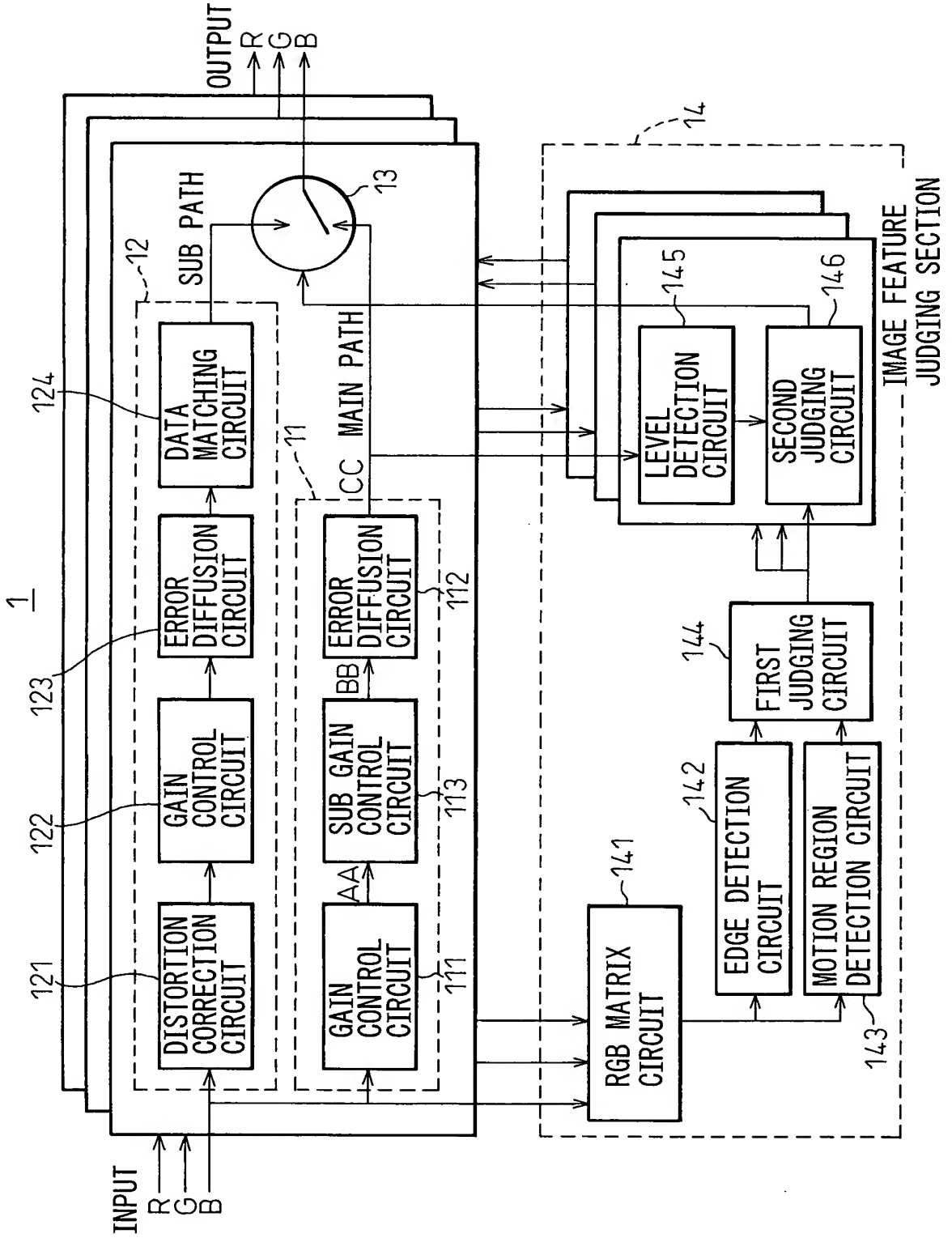


Fig.8



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Fig.9

	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10
	1	2	4	8	12	16	20	24	28	32
0										
1	○									
2		○								
3	○	○								
4			○							
5	○		○							
6		○	○							
7	○	○	○							
8				○						
9	○			○						
10		○		○						
11	○	○		○						
12			○	○						
13	○		○	○						
14		○	○	○						
15	○	○	○	○						
16			○		○					
17	○		○		○					
18		○	○		○					
19	○	○	○		○					
20				○	○					
21	○			○	○					
22		○		○	○					
23	○	○		○	○					
24			○	○	○					
25	○		○	○	○					
26		○	○	○	○					
27	○	○	○	○	○					
28			○	○		○				
29	○		○	○		○				
30		○	○	○		○				
31	○	○	○	○		○				
32			○		○	○				
33	○		○		○	○				
34		○	○		○	○				
35	○	○	○		○	○				
36				○	○	○				
37	○			○	○	○				

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Fig.10

	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10
	1	2	4	8	12	16	20	24	28	32
38		○		○	○	○				
39	○	○		○	○	○				
40			○	○	○	○				
41	○		○	○	○	○				
42		○	○	○	○	○				
43	○	○	○	○	○	○				
44			○	○	○		○			
45	○		○	○	○		○			
46		○	○	○	○		○			
47	○	○	○	○	○		○			
48			○	○		○	○			
49	○		○	○		○	○			
50		○	○	○		○	○			
51	○	○	○	○		○	○			
52			○		○	○	○			
53	○		○		○	○	○			
54		○	○		○	○	○			
55	○	○	○		○	○	○			
56				○	○	○	○			
57	○			○	○	○	○			
58		○		○	○	○	○			
59	○	○		○	○	○	○			
60			○	○	○	○	○			
61	○		○	○	○	○	○			
62		○	○	○	○	○	○			
63	○	○	○	○	○	○	○			
64			○	○	○	○		○		
65	○		○	○	○	○		○		
66		○	○	○	○	○		○		
67	○	○	○	○	○	○		○		
68			○	○	○		○	○		
69	○		○	○	○		○	○		
70		○	○	○	○		○	○		
71	○	○	○	○	○		○	○		
72			○	○		○	○	○		
73	○		○	○		○	○	○		
74		○	○	○		○	○	○		
75	○	○	○	○		○	○	○		

Fig.11

	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10
	1	2	4	8	12	16	20	24	28	32
76			○		○	○	○	○		
77	○		○		○	○	○	○		
78		○	○		○	○	○	○		
79	○	○	○		○	○	○	○		
80				○	○	○	○	○		
81	○			○	○	○	○	○		
82		○		○	○	○	○	○		
83	○	○		○	○	○	○	○		
84			○	○	○	○	○	○		
85	○		○	○	○	○	○	○		
86		○	○	○	○	○	○	○		
87	○	○	○	○	○	○	○	○		
88			○	○	○	○	○		○	
89	○		○	○	○	○	○		○	
90		○	○	○	○	○	○		○	
91	○	○	○	○	○	○	○		○	
92			○	○	○	○		○	○	
93	○		○	○	○	○		○	○	
94		○	○	○	○	○		○	○	
95	○	○	○	○	○	○		○	○	
96			○	○	○		○	○	○	
97	○		○	○	○		○	○	○	
98		○	○	○	○		○	○	○	
99	○	○	○	○	○		○	○	○	
100			○	○		○	○	○	○	
101	○		○	○		○	○	○	○	
102		○			○	○	○	○	○	
103	○	○			○	○	○	○	○	
104			○		○	○	○	○	○	
105	○		○		○	○	○	○	○	
106		○	○		○	○	○	○	○	
107	○	○	○		○	○	○	○	○	
108				○	○	○	○	○	○	
109	○			○	○	○	○	○	○	
110		○		○	○	○	○	○	○	
111	○	○		○	○	○	○	○	○	
112			○	○	○	○	○	○	○	
113	○		○	○	○	○	○	○	○	

$$\frac{12}{60}$$

Fig.12

[illegible]

Fig.13

[illegible]

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Fig.14

	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10
	32	28	24	20	16	12	8	4	2	1
0										
1										○
2									○	
3									○	○
4								○		
5								○		○
6								○	○	
7								○	○	○
8							○			
9							○			○
10							○		○	
11							○		○	○
12							○	○		
13							○	○		○
14							○	○	○	
15							○	○	○	○
16						○		○		
17						○		○		○
18						○		○	○	
19						○		○	○	○
20						○	○			
21						○	○			○
22						○	○		○	
23						○	○		○	○
24						○	○	○		
25						○	○	○		○
26						○	○	○	○	
27						○	○	○	○	○
28					○		○	○		
29					○		○	○		○
30					○		○	○	○	
31					○		○	○	○	○
32					○	○		○		
33					○	○		○		○
34					○	○		○	○	
35					○	○		○	○	○
36					○	○	○			
37					○	○	○			○

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Fig.15

	SF1	SF 2	SF 3	SF 4	SF 5	SF 6	SF 7	SF 8	SF 9	SF10
	32	28	24	20	16	12	8	4	2	1
38					○	○	○		○	
39					○	○	○		○	○
40					○	○	○	○		
41					○	○	○	○		○
42					○	○	○	○	○	
43					○	○	○	○	○	○
44				○		○	○	○		
45				○		○	○	○		○
46				○		○	○	○	○	
47				○		○	○	○	○	○
48				○	○		○	○		
49				○	○		○	○		○
50				○	○		○	○	○	
51				○	○		○	○	○	○
52				○	○	○		○		
53				○	○	○		○		○
54				○	○	○		○	○	
55				○	○	○		○	○	○
56				○	○	○	○			
57				○	○	○	○			○
58				○	○	○	○		○	
59				○	○	○	○		○	○
60				○	○	○	○	○		
61				○	○	○	○	○		○
62				○	○	○	○	○	○	
63				○	○	○	○	○	○	○
64			○		○	○	○	○		
65			○		○	○	○	○		○
66			○		○	○	○	○	○	
67			○		○	○	○	○	○	○
68			○	○		○	○	○		
69			○	○		○	○	○		○
70			○	○		○	○	○	○	
71			○	○		○	○	○	○	○
72			○	○	○		○	○		
73			○	○	○		○	○		○
74			○	○	○		○	○	○	
75			○	○	○		○	○	○	○

Fig.16

[illegible]

Fig.17

[illegible]

$$\frac{18}{60}$$

Fig.18

[illegible]

Fig.19

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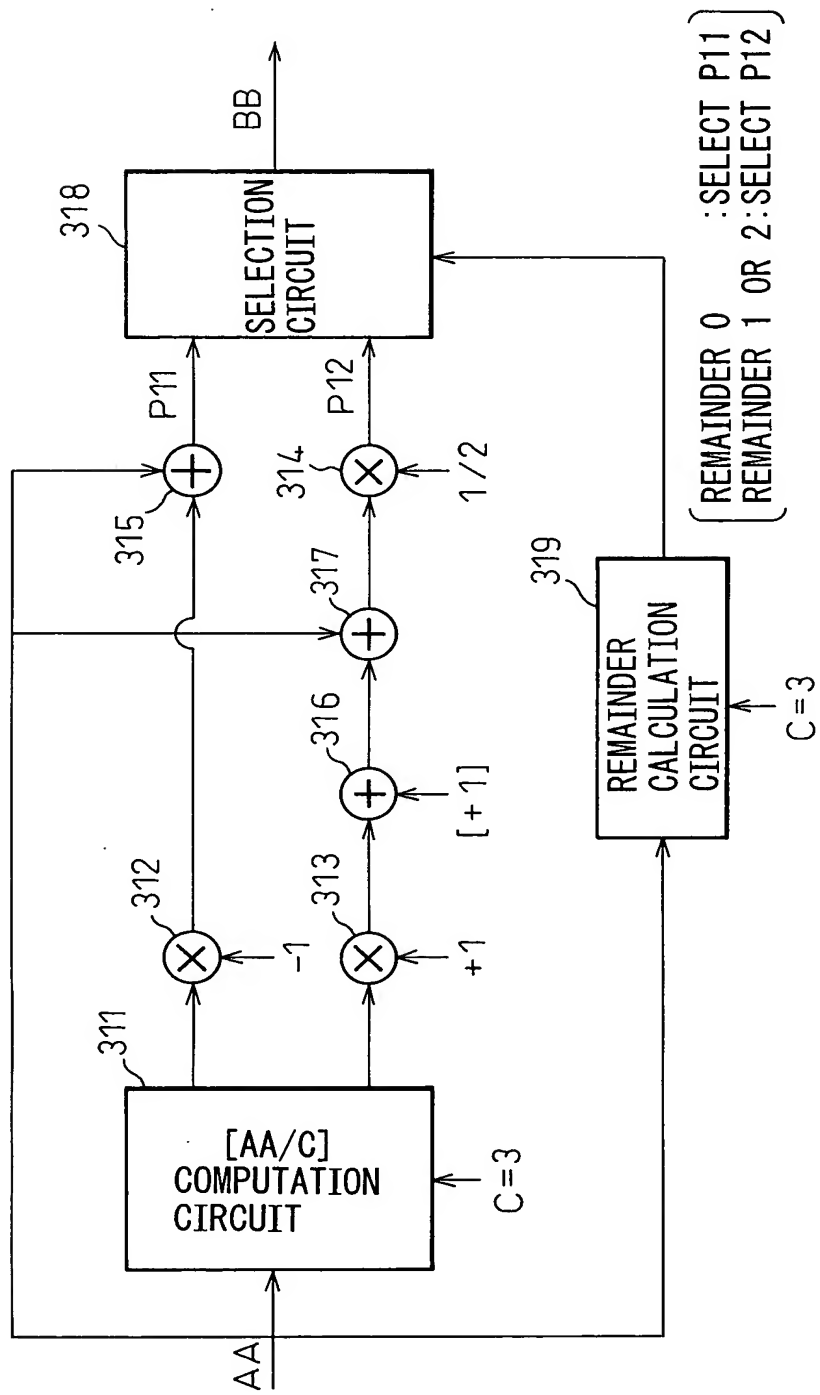
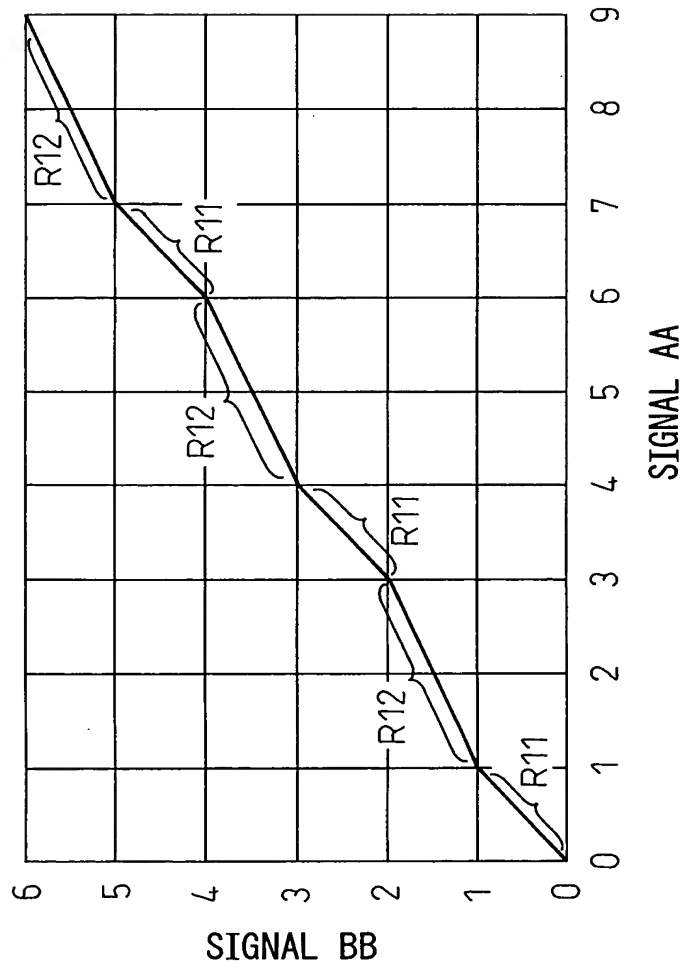


Fig.20



<RELATIONS BETWEEN SIGNAL AA AND SIGNAL BB>

REGION R11 $3 \times k \leq \text{SIGNAL AA} < 3 \times k+1$:SLOPE1 INTERCEPT-k

REGION R12 $3 \times k+1 \leq \text{SIGNAL AA} < 3 \times (k+1)$:SLOPE1/2 INTERCEPT $(1/2) \times (k+1)$
(k=0.1.2. ...)

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Fig.21

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
0	0	0.5	0	0
1	1	1	1	1
2	2	1.5	1.5	2
3	2	2.5	2	3
4	3	3	3	4
5	4	3.5	3.5	5
6	4	4.5	4	6
7	5	5	5	7
8	6	5.5	5.5	8
9	6	6.5	6	9
10	7	7	7	10
11	8	7.5	7.5	11
12	8	8.5	8	12
13	9	9	9	13
14	10	9.5	9.5	14
15	10	10.5	10	15
16	11	11	11	16
17	12	11.5	11.5	17
18	12	12.5	12	18
19	13	13	13	19
20	14	13.5	13.5	20
21	14	14.5	14	21
22	15	15	15	22
23	16	15.5	15.5	21
24	16	16.5	16	24
25	17	17	17	25
26	18	17.5	17.5	24
27	18	18.5	18	27
28	19	19	19	28
29	20	19.5	19.5	29
30	20	20.5	20	30
31	21	21	21	31
32	22	21.5	21.5	32
33	22	22.5	22	33
34	23	23	23	34
35	24	23.5	23.5	35
36	24	24.5	24	36
37	25	25	25	37

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Fig.22

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
38	26	25.5	25.5	38
39	26	26.5	26	39
40	27	27	27	40
41	28	27.5	27.5	41
42	28	28.5	28	42
43	29	29	29	43
44	30	29.5	29.5	42
45	30	30.5	30	45
46	31	31	31	46
47	32	31.5	31.5	47
48	32	32.5	32	48
49	33	33	33	49
50	34	33.5	33.5	50
51	34	34.5	34	51
52	35	35	35	52
53	36	35.5	35.5	53
54	36	36.5	36	54
55	37	37	37	55
56	38	37.5	37.5	56
57	38	38.5	38	57
58	39	39	39	58
59	40	39.5	39.5	59
60	40	40.5	40	60
61	41	41	41	61
62	42	41.5	41.5	62
63	42	42.5	42	63
64	43	43	43	64
65	44	43.5	43.5	65
66	44	44.5	44	66
67	45	45	45	67
68	46	45.5	45.5	68
69	46	46.5	46	69
70	47	47	47	70
71	48	47.5	47.5	71
72	48	48.5	48	72
73	49	49	49	73
74	50	49.5	49.5	74
75	50	50.5	50	75
76	51	51	51	76

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Fig. 23

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
77	52	51.5	51.5	77
78	52	52.5	52	78
79	53	53	53	79
80	54	53.5	53.5	80
81	54	54.5	54	81
82	55	55	55	82
83	56	55.5	55.5	83
84	56	56.5	56	84
85	57	57	57	85
86	58	57.5	57.5	86
87	58	58.5	58	87
88	59	59	59	88
89	60	59.5	59.5	89
90	60	60.5	60	90
91	61	61	61	91
92	62	61.5	61.5	92
93	62	62.5	62	93
94	63	63	63	94
95	64	63.5	63.5	95
96	64	64.5	64	96
97	65	65	65	97
98	66	65.5	65.5	98
99	66	66.5	66	99
100	67	67	67	100
101	68	67.5	67.5	101
102	68	68.5	68	102
103	69	69	69	103
104	70	69.5	69.5	104
105	70	70.5	70	105
106	71	71	71	106
107	72	71.5	71.5	107
108	72	72.5	72	108
109	73	73	73	109
110	74	73.5	73.5	110
111	74	74.5	74	111
112	75	75	75	112
113	76	75.5	75.5	113
114	76	76.5	76	114
115	77	77	77	115

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Fig.24

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
116	78	77.5	77.5	116
117	78	78.5	78	117
118	79	79	79	118
119	80	79.5	79.5	119
120	80	80.5	80	120
121	81	81	81	121
122	82	81.5	81.5	122
123	82	82.5	82	123
124	83	83	83	124
125	84	83.5	83.5	125
126	84	84.5	84	126
127	85	85	85	127
128	86	85.5	85.5	128
129	86	86.5	86	129
130	87	87	87	130
131	88	87.5	87.5	131
132	88	88.5	88	132
133	89	89	89	133
134	90	89.5	89.5	134
135	90	90.5	90	135
136	91	91	91	136
137	92	91.5	91.5	137
138	92	92.5	92	138
139	93	93	93	139
140	94	93.5	93.5	140
141	94	94.5	94	141
142	95	95	95	142
143	96	95.5	95.5	143
144	96	96.5	96	144
145	97	97	97	145
146	98	97.5	97.5	146
147	98	98.5	98	147
148	99	99	99	148
149	100	99.5	99.5	149
150	100	100.5	100	150
151	101	101	101	151
152	102	101.5	101.5	152
153	102	102.5	102	153
154	103	103	103	154

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Fig.25

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
155	104	103.5	103.5	155
156	104	104.5	104	156
157	105	105	105	157
158	106	105.5	105.5	158
159	106	106.5	106	159
160	107	107	107	160
161	108	107.5	107.5	161
162	108	108.5	108	162
163	109	109	109	163
164	110	109.5	109.5	164
165	110	110.5	110	165
166	111	111	111	166
167	112	111.5	111.5	167
168	112	112.5	112	168
169	113	113	113	169
170	114	113.5	113.5	170
171	114	114.5	114	171
172	115	115	115	172
173	116	115.5	115.5	173
174	116	116.5	116	174
175	117	117	117	175
176	118	117.5	117.5	176
177	118	118.5	118	177
178	119	119	119	178
179	120	119.5	119.5	179
180	120	120.5	120	180
181	121	121	121	181
182	122	121.5	121.5	182
183	122	122.5	122	183
184	123	123	123	184
185	124	123.5	123.5	185
186	124	124.5	124	186
187	125	125	125	187
188	126	125.5	125.5	188
189	126	126.5	126	189
190	127	127	127	190
191	128	127.5	127.5	191
192	128	128.5	128	192
193	129	129	129	193

Fig. 26

※WHEN REMAINDER IS 0, P11 IS SELECTED;
OTHERWISE, P12 IS SELECTED

AA	P11	P12	BB	DISPLAY
194	130	129.5	129.5	194
195	130	130.5	130	195
196	131	131	131	196
197	132	131.5	131.5	197
198	132	132.5	132	198
199	133	133	133	199
200	134	133.5	133.5	200
201	134	134.5	134	201
202	135	135	135	202
203	136	135.5	135.5	203
204	136	136.5	136	204
205	137	137	137	205
206	138	137.5	137.5	206
207	138	138.5	138	207
208	139	139	139	208
209	140	139.5	139.5	209
210	140	140.5	140	210
211	141	141	141	211
212	142	141.5	141.5	212
213	142	142.5	142	213
214	143	143	143	214
215	144	143.5	143.5	215
216	144	144.5	144	216
217	145	145	135	217
218	146	145.5	145.5	218
219	146	146.5	146	219
220	147	147	147	220

Fig. 27

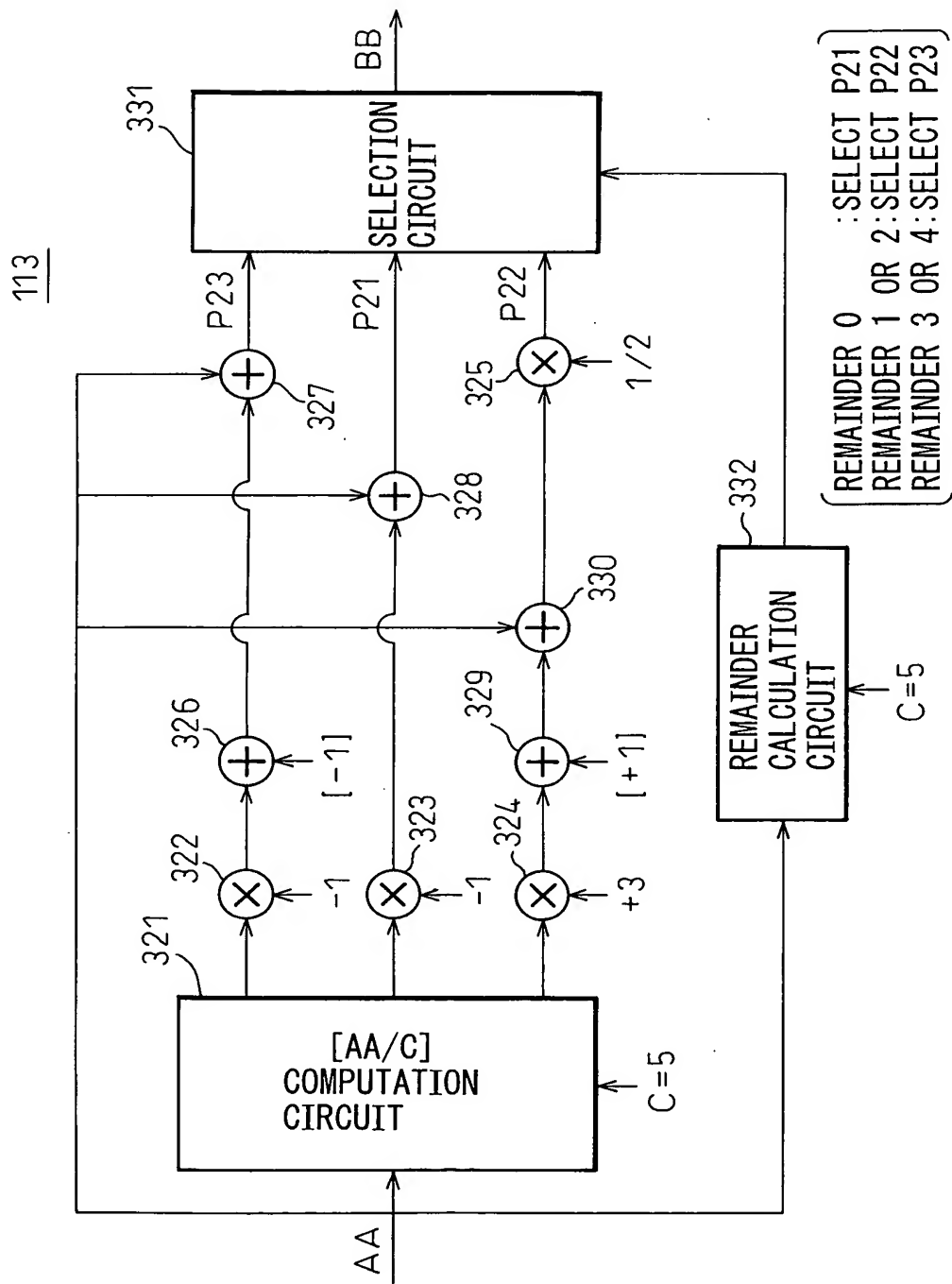
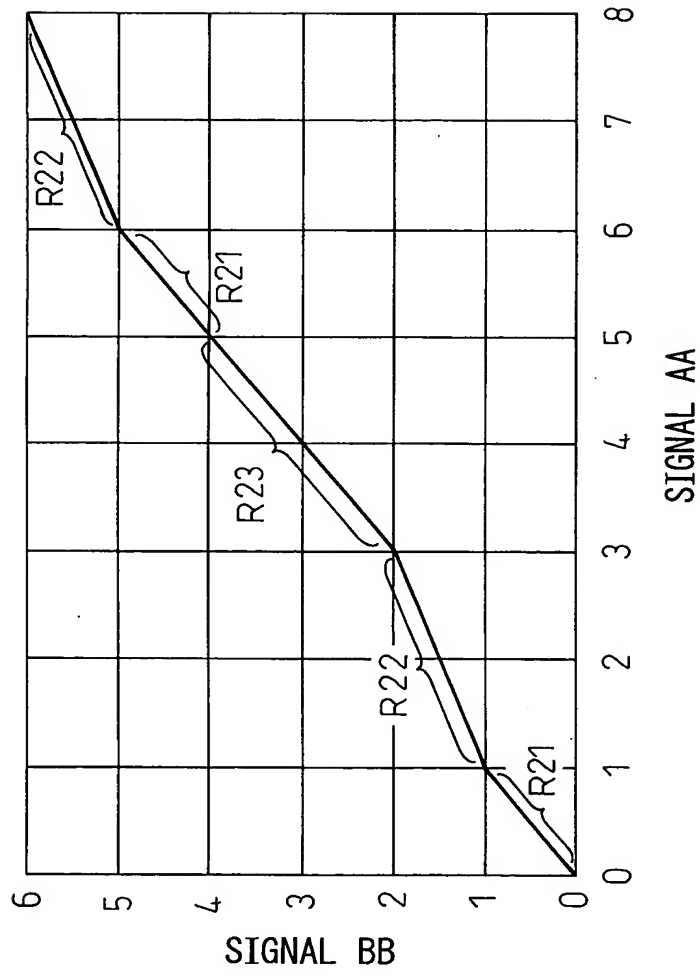


Fig. 28



<RELATIONS BETWEEN SIGNAL AA AND SIGNAL BB>
 REGION R21 $5 \times k \leq \text{SIGNAL AA} < 5 \times k + 1$: SLOPE1 INTERCEPT-k
 REGION R23 $5 \times k + 3 \leq \text{SIGNAL AA} < 5 \times (k+1)$: SLOPE1 INTERCEPT-(k+1)
 REGION R22 $5 \times k + 1 \leq \text{SIGNAL AA} < 5 \times k$: SLOPE1/2 INTERCEPT $(1/2) \times (3 \times k + 1)$
 (k=0. 1. 2. ...)

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Fig.29

※WHEN REMAINDER IS 0, P21 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P22 IS SELECTED;
OTHERWISE, P23 IS SELECTED

AA	P21	P22	P23	BB	DISPLAY
0	0	0.5	-1	0	0
1	1	1	0	1	1
2	2	1.5	1	1.5	2
3	3	2	2	2	3
4	4	2.5	3	3	4
5	4	4.5	3	4	5
6	5	5	4	5	6
7	6	5.5	5	5.5	7
8	7	6	6	6	8
9	8	6.5	7	7	9
10	8	8.5	7	8	10
11	9	9	8	9	11
12	10	9.5	9	9.5	12
13	11	10	10	10	13
14	12	10.5	11	11	14
15	12	12.5	11	12	15
16	13	13	12	13	16
17	14	13.5	13	13.5	17
18	15	14	14	14	18
19	16	14.5	15	15	19
20	16	16.5	15	16	20
21	17	17	16	17	21
22	18	17.5	17	17.5	22
23	19	18	18	18	23
24	20	18.5	19	19	24
25	20	20.5	19	20	25
26	21	21	20	21	26
27	22	21.5	21	21.5	27
28	23	22	22	22	28
29	24	22.5	23	23	29
30	24	24.5	23	24	30
31	25	25	24	25	31
32	26	25.5	25	25.5	32
33	27	26	26	26	33
34	28	26.5	27	27	34
35	28	28.5	27	28	35
36	29	29	28	29	36
37	30	29.5	29	29.5	37

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Fig.30

※WHEN REMAINDER IS 0, P21 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P22 IS SELECTED;
OTHERWISE, P23 IS SELECTED

AA	P21	P22	P23	BB	DISPLAY
38	31	30	30	30	38
39	32	30.5	31	31	39
40	32	32.5	31	32	40
41	33	33	32	33	41
42	34	33.5	33	33.5	42
43	35	34	34	34	43
44	36	34.5	35	35	44
45	36	36.5	35	36	45
46	37	37	36	37	46
47	38	37.5	37	37.5	47
48	39	38	38	38	48
49	40	38.5	39	39	49
50	40	40.5	39	40	50
51	41	41	40	41	51
52	42	41.5	41	41.5	52
53	43	42	42	42	53
54	44	42.5	43	43	54
55	44	44.5	43	44	55
56	45	45	44	45	56
57	46	45.5	45	45.5	57
58	47	46	46	46	58
59	48	46.5	47	47	59
60	48	48.5	47	48	60
61	49	49	48	49	61
62	50	49.5	49	49.5	62
63	51	50	50	50	63
64	52	50.5	51	51	64
65	52	52.5	51	52	65
66	53	53	52	53	66
67	54	53.5	53	53.5	67
68	55	54	54	54	68
69	56	54.5	55	55	69
70	56	56.5	55	56	70
71	57	57	56	57	71
72	58	57.5	57	57.5	72
73	59	58	58	58	73
74	60	58.5	59	59	74
75	60	60.5	59	60	75
76	61	61	60	61	76

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Fig.31

※WHEN REMAINDER IS 0, P21 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P22 IS SELECTED;
OTHERWISE, P23 IS SELECTED

AA	P21	P22	P23	BB	DISPLAY
77	62	61.5	61	61.5	77
78	63	62	62	62	78
79	64	62.5	63	63	79
80	64	64.5	63	64	80
81	65	65	64	65	81
82	66	65.5	65	65.5	82
83	67	66	66	66	83
84	68	66.5	67	67	84
85	68	68.5	67	68	85
86	69	69	68	69	86
87	70	69.5	69	69.5	87
88	71	70	70	70	88
89	72	70.5	71	71	89
90	72	72.5	71	72	90
91	73	73	72	73	91
92	74	73.5	73	73.5	92
93	75	74	74	74	93
94	76	74.5	75	75	94
95	76	76.5	75	76	95
96	77	77	76	77	96
97	78	77.5	77	77.5	97
98	79	78	78	78	98
99	80	78.5	79	79	99
100	80	80.5	79	80	100
101	81	81	80	81	101
102	82	81.5	81	81.5	102
103	83	82	82	82	103
104	84	82.5	83	83	104
105	84	84.5	83	84	105
106	85	85	84	85	106
107	86	85.5	85	85.5	107
108	87	86	86	86	108
109	88	86.5	87	87	109
110	88	88.5	87	88	110
111	89	89	88	89	111
112	90	89.5	89	89.5	112
113	91	90	90	90	113
114	92	90.5	91	91	114
115	92	92.5	91	92	115

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Fig.32

※WHEN REMAINDER IS 0, P21 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P22 IS SELECTED;
OTHERWISE, P23 IS SELECTED

AA	P21	P22	P23	BB	DISPLAY
116	93	93	92	93	116
117	94	93.5	93	93.5	117
118	95	94	94	94	118
119	96	94.5	95	95	119
120	96	96.5	95	96	120
121	97	97	96	97	121
122	98	97.5	97	97.5	122
123	99	98	98	98	123
124	100	98.5	99	99	124
125	100	100.5	99	100	125
126	101	101	100	101	126
127	102	101.5	101	101.5	127
128	103	102	102	102	128
129	104	102.5	103	103	129
130	104	104.5	103	104	130
131	105	105	104	105	131
132	106	105.5	105	105.5	132
133	107	106	106	106	133
134	108	106.5	107	107	134
135	108	108.5	107	108	135
136	109	109	108	109	136
137	110	109.5	109	109.5	137
138	111	110	110	110	138
139	112	110.5	111	111	139
140	112	112.5	111	112	140
141	113	113	112	113	141
142	114	113.5	113	113.5	142
143	115	114	114	114	143
144	116	114.5	115	115	144
145	116	116.5	115	116	145
146	117	117	116	117	146
147	118	117.5	117	117.5	147
148	119	118	118	118	148
149	120	118.5	119	119	149
150	120	120.5	119	120	150
151	121	121	120	121	151
152	122	121.5	121	121.5	152
153	123	122	122	122	153
154	124	122.5	123	123	154

Fig.33

※WHEN REMAINDER IS 0, P21 IS SELECTED;
 WHEN REMAINDER IS 1 OR 2, P22 IS SELECTED;
 OTHERWISE, P23 IS SELECTED

AA	P21	P22	P23	BB	DISPLAY
155	124	124.5	123	124	155
156	125	125	124	125	156
157	126	125.5	125	125.5	157
158	127	126	126	126	158
159	128	126.5	127	127	159
160	128	128.5	127	128	160
161	129	129	128	129	161
162	130	129.5	129	129.5	162
163	131	130	130	130	163
164	132	130.5	131	131	164
165	132	132.5	131	132	165
166	133	133	132	133	166
167	134	133.5	133	133.5	167
168	135	134	134	134	168
169	136	134.5	135	135	169
170	136	136.5	135	136	170
171	137	137	136	137	171
172	138	137.5	137	137.5	172
173	139	138	138	138	173
174	140	138.5	139	139	174
175	140	140.5	139	140	175
176	141	141	140	141	176
177	142	141.5	141	141.5	177
178	143	142	142	142	178
179	144	142.5	143	143	179
180	144	144.5	143	144	180
181	145	145	144	145	181
182	146	145.5	145	145.5	182
183	147	146	146	146	183
184	148	146.5	147	147	184

Fig.34

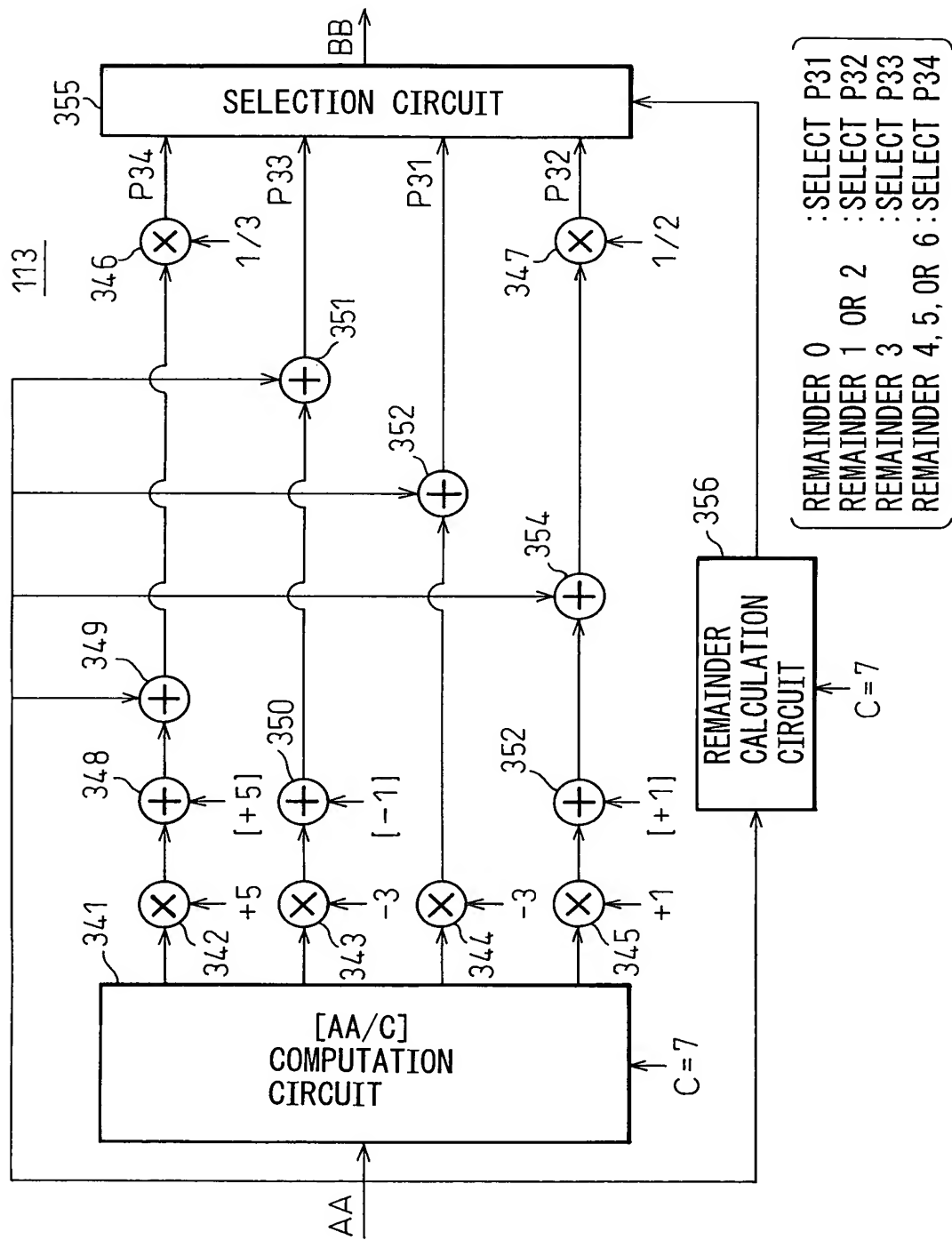
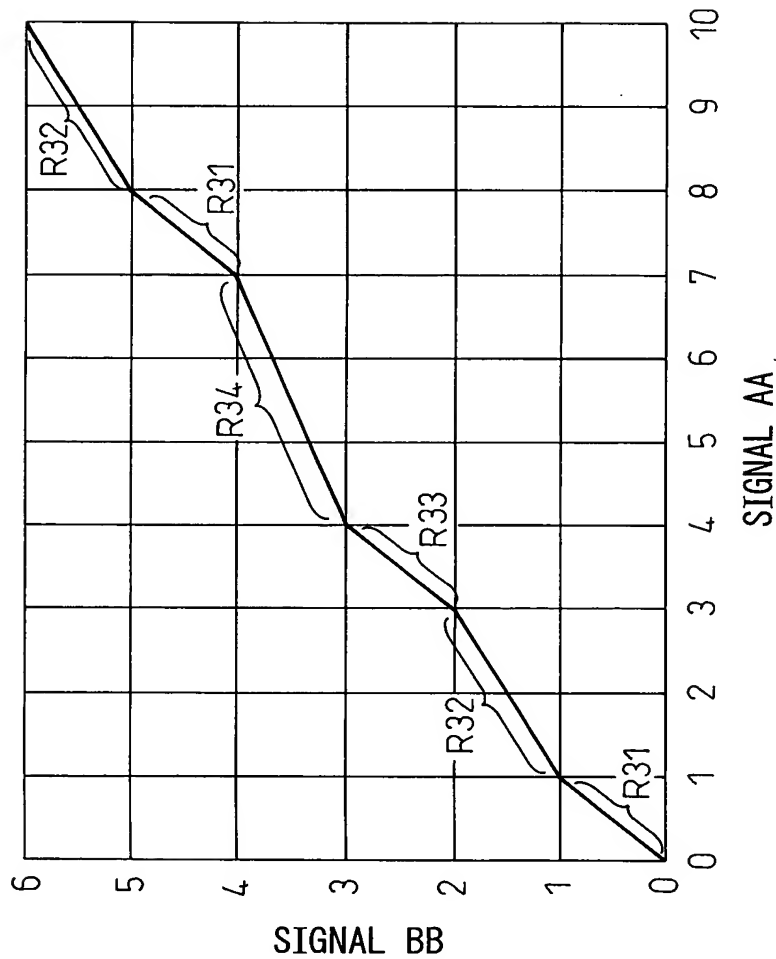


Fig.35



<RELATIONS BETWEEN SIGNAL AA AND SIGNAL BB>

REGION	SIGNAL AA	SIGNAL BB	SLOPE	INTERCEPT
R31	$0 \leq \text{SIGNAL AA} < 1$	$0 \leq \text{SIGNAL BB} < 1$	1	0
R32	$1 \leq \text{SIGNAL AA} < 2$	$1 \leq \text{SIGNAL BB} < 2$	1	0
R33	$2 \leq \text{SIGNAL AA} < 3$	$2 \leq \text{SIGNAL BB} < 3$	1	0
R34	$3 \leq \text{SIGNAL AA} < 4$	$3 \leq \text{SIGNAL BB} < 4$	1	0

(k=0, 1, 2, ...)

Fig.36 ※WHEN REMAINDER IS 0, P31 IS SELECTED;
 WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
 WHEN REMAINDER IS 3, P33 IS SELECTED;
 OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
0	0	0.5	-1	1.666667	0	0
1	1	1	0	2	1	1
2	2	1.5	1	2.333333	1.5	2
3	3	2	2	2.666667	2	3
4	4	2.5	3	3	3	4
5	5	3	4	3.333333	3.333333	5
6	6	3.5	5	3.666667	3.666667	6
7	4	4.5	3	5.666667	4	7
8	5	5	4	6	5	8
9	6	5.5	5	6.333333	5.5	9
10	7	6	6	6.666667	6	10
11	8	6.5	7	7	7	11
12	9	7	8	7.333333	7.333333	12
13	10	7.5	9	7.666667	7.666667	13
14	8	8.5	7	9.666667	8	14
15	9	9	8	10	9	15
16	10	9.5	9	10.333333	9.5	16
17	11	10	10	10.666667	10	17
18	12	10.5	11	11	11	18
19	13	11	12	11.333333	11.333333	19
20	14	11.5	13	11.666667	11.666667	20
21	12	12.5	11	13.666667	12	21
22	13	13	12	14	13	22
23	14	13.5	13	14.333333	13.5	23
24	15	14	14	14.666667	14	24
25	16	14.5	15	15	15	25
26	17	15	16	15.333333	15.333333	26
27	18	15.5	17	15.666667	15.666667	27
28	16	16.5	15	17.666667	16	28
29	17	17	16	18	17	29
30	18	17.5	17	18.333333	17.5	30
31	19	18	18	18.666667	18	31
32	20	18.5	19	19	19	32
33	21	19	20	19.333333	19.333333	33
34	22	19.5	21	19.666667	19.666667	34
35	20	20.5	19	21.666667	20	35
36	21	21	20	22	21	36
37	22	21.5	21	22.333333	21.5	37

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Fig.37 ※WHEN REMAINDER IS 0, P31 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
WHEN REMAINDER IS 3, P33 IS SELECTED;
OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
38	23	22	22	22.66667	22	38
39	24	22.5	23	23	23	39
40	25	23	24	23.33333	23.33333	40
41	26	23.5	25	23.66667	23.66667	41
42	24	24.5	23	25.66667	24	42
43	25	25	24	26	25	43
44	26	25.5	25	26.33333	25.5	44
45	27	26	26	26.66667	26	45
46	28	26.5	27	27	27	46
47	29	27	28	27.33333	27.33333	47
48	30	27.5	29	27.66667	27.66667	48
49	28	28.5	27	29.66667	28	49
50	29	29	28	30	29	50
51	30	29.5	29	30.33333	29.5	51
52	31	30	30	30.66667	30	52
53	32	30.5	31	31	31	53
54	33	31	32	31.33333	31.33333	54
55	34	31.5	33	31.66667	31.66667	55
56	32	32.5	31	33.66667	32	56
57	33	33	32	34	33	57
58	34	33.5	33	34.33333	33.5	58
59	35	34	34	34.66667	34	59
60	36	34.5	35	35	35	60
61	37	35	36	35.33333	35.33333	61
62	38	35.5	37	35.66667	35.66667	62
63	36	36.5	35	37.66667	36	63
64	37	37	36	38	37	64
65	38	37.5	37	38.33333	37.5	65
66	39	38	38	38.66667	38	66
67	40	38.5	39	39	39	67
68	41	39	40	39.33333	39.33333	68
69	42	39.5	41	39.66667	39.66667	69
70	40	40.5	39	41.66667	40	70
71	41	41	40	42	41	71
72	42	41.5	41	42.33333	41.5	72
73	43	42	42	42.66667	42	73
74	44	42.5	43	43	43	74
75	45	43	44	43.33333	43.33333	75
76	46	43.5	45	43.66667	43.66667	76

Fig.38

※WHEN REMAINDER IS 0, P31 IS SELECTED;
 WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
 WHEN REMAINDER IS 3, P33 IS SELECTED;
 OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
77	44	44.5	43	45.66667	44	77
78	45	45	44	46	45	78
79	46	45.5	45	46.33333	45.5	79
80	47	46	46	46.66667	46	80
81	48	46.5	47	47	47	81
82	49	47	48	47.33333	47.33333	82
83	50	47.5	49	47.66667	47.66667	83
84	48	48.5	47	49.66667	48	84
85	49	49	48	50	49	85
86	50	49.5	49	50.33333	49.5	86
87	51	50	50	50.66667	50	87
88	52	50.5	51	51	51	88
89	53	51	52	51.33333	51.33333	89
90	54	51.5	53	51.66667	51.66667	90
91	52	52.5	51	53.66667	52	91
92	53	53	52	54	53	92
93	54	53.5	53	54.33333	53.5	93
94	55	54	54	54.66667	54	94
95	56	54.5	55	55	55	95
96	57	55	56	55.33333	55.33333	96
97	58	55.5	57	55.66667	55.66667	97
98	56	56.5	55	57.66667	56	98
99	57	57	56	58	57	99
100	58	57.5	57	58.33333	57.5	100
101	59	58	58	58.66667	58	101
102	60	58.5	59	59	59	102
103	61	59	60	59.33333	59.33333	103
104	62	59.5	61	59.66667	59.66667	104
105	60	60.5	59	61.66667	60	105
106	61	61	60	62	61	106
107	62	61.5	61	62.33333	61.5	107
108	63	62	62	62.66667	62	108
109	64	62.5	63	63	63	109
110	65	63	64	63.33333	63.33333	110
111	66	63.5	65	63.66667	63.66667	111
112	64	64.5	63	65.66667	64	112
113	65	65	64	66	65	113
114	66	65.5	65	66.33333	65.5	114
115	67	66	66	66.66667	66	115

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Fig.39

※WHEN REMAINDER IS 0, P31 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
WHEN REMAINDER IS 3, P33 IS SELECTED;
OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
116	68	66.5	67	67	67	116
117	69	67	68	67.33333	67.33333	117
118	70	67.5	69	67.66667	67.66667	118
119	68	68.5	67	69.66667	68	119
120	69	69	68	70	69	120
121	70	69.5	69	70.33333	69.5	121
122	71	70	70	70.66667	70	122
123	72	70.5	71	71	71	123
124	73	71	72	71.33333	71.33333	124
125	74	71.5	73	71.66667	71.66667	125
126	72	72.5	71	73.66667	72	126
127	73	73	72	74	73	127
128	74	73.5	73	74.33333	73.5	128
129	75	74	74	74.66667	74	129
130	76	74.5	75	75	75	130
131	77	75	76	75.33333	75.33333	131
132	78	75.5	77	75.66667	75.66667	132
133	76	76.5	75	77.66667	76	133
134	77	77	76	78	77	134
135	78	77.5	77	78.33333	77.5	135
136	79	78	78	78.66667	78	136
137	80	78.5	79	79	79	137
138	81	79	80	79.33333	79.33333	138
139	82	79.5	81	79.66667	79.66667	139
140	80	80.5	79	81.66667	80	140
141	81	81	80	82	81	141
142	82	81.5	81	82.33333	81.5	142
143	83	82	82	82.66667	82	143
144	84	82.5	83	83	83	144
145	85	83	84	83.33333	83.33333	145
146	86	83.5	85	83.66667	83.66667	146
147	84	84.5	83	85.66667	84	147
148	85	85	84	86	85	148
149	86	85.5	85	86.33333	85.5	149
150	87	86	86	86.66667	86	150
151	88	86.5	87	87	87	151
152	89	87	88	87.33333	87.33333	152
153	90	87.5	89	87.66667	87.66667	153
154	88	88.5	87	89.66667	88	154

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Fig. 40 ※WHEN REMAINDER IS 0, P31 IS SELECTED;
WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
WHEN REMAINDER IS 3, P33 IS SELECTED;
OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
155	89	89	88	90	89	155
156	90	89.5	89	90.33333	89.5	156
157	91	90	90	90.66667	90	157
158	92	90.5	91	91	91	158
159	93	91	92	91.33333	91.33333	159
160	94	91.5	93	91.66667	91.66667	160
161	92	92.5	91	93.66667	92	161
162	93	93	92	94	93	162
163	94	93.5	93	94.33333	93.5	163
164	95	94	94	94.66667	94	164
165	96	94.5	95	95	95	165
166	97	95	96	95.33333	95.33333	166
167	98	95.5	97	95.66667	95.66667	167
168	96	96.5	95	97.66667	96	168
169	97	97	96	98	97	169
170	98	97.5	97	98.33333	97.5	170
171	99	98	98	98.66667	98	171
172	100	98.5	99	99	99	172
173	101	99	100	99.33333	99.33333	173
174	102	99.5	101	99.66667	99.66667	174
175	100	100.5	99	101.6667	100	175
176	101	101	100	102	101	176
177	102	101.5	101	102.3333	101.5	177
178	103	102	102	102.6667	102	178
179	104	102.5	103	103	103	179
180	105	103	104	103.3333	103.3333	180
181	106	103.5	105	103.6667	103.6667	181
182	104	104.5	103	105.6667	104	182
183	105	105	104	106	105	183
184	106	105.5	105	106.3333	105.5	184
185	107	106	106	106.6667	106	185
186	108	106.5	107	107	107	186
187	109	107	108	107.3333	107.3333	187
188	110	107.5	109	107.6667	107.6667	188
189	108	108.5	107	109.6667	108	189
190	109	109	108	110	109	190
191	110	109.5	109	110.3333	109.5	191
192	111	110	110	110.6667	110	192
193	112	110.5	111	111	111	193

Fig.41 ※WHEN REMAINDER IS 0, P31 IS SELECTED;
 WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
 WHEN REMAINDER IS 3, P33 IS SELECTED;
 OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
194	113	111	112	111.3333	111.3333	194
195	114	111.5	113	111.6667	111.6667	195
196	112	112.5	111	113.6667	112	196
197	113	113	112	114	113	197
198	114	113.5	113	114.3333	113.5	198
199	115	114	114	114.6667	114	199
200	116	114.5	115	115	115	200
201	117	115	116	115.3333	115.3333	201
202	118	115.5	117	115.6667	115.6667	202
203	116	116.5	115	117.6667	116	203
204	117	117	116	118	117	204
205	118	117.5	117	118.3333	117.5	205
206	119	118	118	118.6667	118	206
207	120	118.5	119	119	119	207
208	121	119	120	119.3333	119.3333	208
209	122	119.5	121	119.6667	119.6667	209
210	120	120.5	119	121.6667	120	210
211	121	121	120	122	121	211
212	122	121.5	121	122.3333	121.5	212
213	123	122	122	122.6667	122	213
214	124	122.5	123	123	123	214
215	125	123	124	123.3333	123.3333	215
216	126	123.5	125	123.6667	123.6667	216
217	124	124.5	123	125.6667	124	217
218	125	125	124	126	125	218
219	126	125.5	125	126.3333	125.5	219
220	127	126	126	126.6667	126	220
221	128	126.5	127	127	127	221
222	129	127	128	127.3333	127.3333	222
223	130	127.5	129	127.6667	127.6667	223
224	128	128.5	127	129.6667	128	224
225	129	129	128	130	129	225
226	130	129.5	129	130.3333	129.5	226
227	131	130	130	130.6667	130	227
228	132	130.5	131	131	131	228
229	133	131	132	131.3333	131.3333	229
230	134	131.5	133	131.6667	131.6667	230
231	132	132.5	131	133.6667	132	231
232	133	133	132	134	133	232

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Fig.42

※WHEN REMAINDER IS 0, P31 IS SELECTED;
 WHEN REMAINDER IS 1 OR 2, P32 IS SELECTED;
 WHEN REMAINDER IS 3, P33 IS SELECTED;
 OTHERWISE, P34 IS SELECTED

AA	P31	P32	P33	P34	BB	DISPLAY
233	134	133.5	133	134.3333	133.5	233
234	135	134	134	134.6667	134	234
235	136	134.5	135	135	135	235
236	137	135	136	135.3333	135.3333	236
237	138	135.5	137	135.6667	135.6667	237
238	136	136.5	135	137.6667	136	238
239	137	137	136	138	137	239
240	138	137.5	137	138.3333	137.5	240
241	139	138	138	138.6667	138	241
242	140	138.5	139	139	139	242
243	141	139	140	139.3333	139.3333	243
244	142	139.5	141	139.6667	139.6667	244
245	140	140.5	139	141.6667	140	245
246	141	141	140	142	141	246
247	142	141.5	141	142.3333	141.5	247
248	143	142	142	142.6667	142	248
249	144	142.5	143	143	143	249
250	145	143	144	143.3333	143.3333	250
251	146	143.5	145	143.6667	143.6667	251
252	144	144.5	143	145.6667	144	252
253	145	145	144	146	145	253
254	146	145.5	145	146.3333	145.5	254
255	147	146	146	146.6667	146	255
256	148	146.5	147	147	147	256

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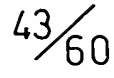
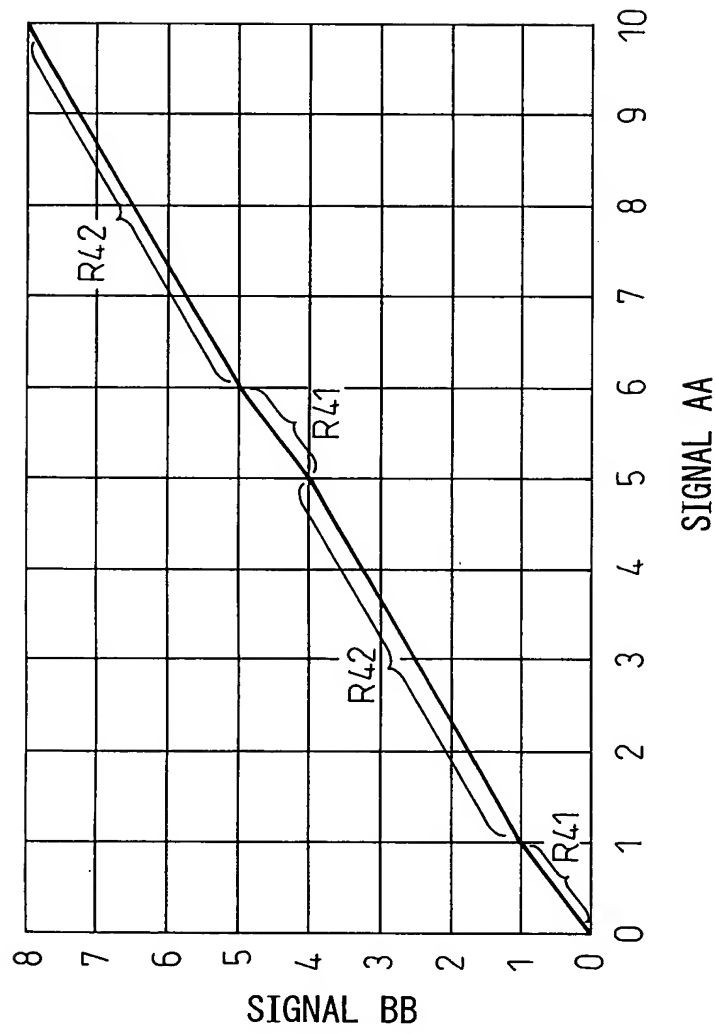


Fig. 44



<RELATIONS BETWEEN SIGNAL AA AND SIGNAL BB>

REGION R41 $5 \times k \leq \text{SIGNAL AA} < 5 \times k+1$: SLOPE 1 INTERCEPT $-k \times 3$

REGION R42 $5 \times k+1 \leq \text{SIGNAL AA} < 5 \times (k+1)$: SLOPE $3/4$ INTERCEPT $(1/4) \times (k+1)$
($k=0.1.2. \dots$)

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Fig. 45

※WHEN REMAINDER IS 0, P41 IS SELECTED;
OTHERWISE, P42 IS SELECTED

AA	P41	P42	BB	DISPLAY
0	0	0.25	0	0
1	1	1	1	1
2	2	1.75	1.75	2
3	3	2.5	2.5	3
4	4	3.25	3.25	4
5	4	4.25	4	5
6	5	5	5	6
7	6	5.75	5.75	7
8	7	6.5	6.5	8
9	8	7.25	7.25	9
10	8	8.25	8	10
11	9	9	9	11
12	10	9.75	9.75	12
13	11	10.5	10.5	13
14	12	11.25	11.25	14
15	12	12.25	12	15
16	13	13	13	16
17	14	13.75	13.75	17
18	15	14.5	14.5	18
19	16	15.25	15.25	19
20	16	16.25	16	20
21	17	17	17	21
22	18	17.75	17.75	22
23	19	18.5	18.5	23
24	20	19.25	19.25	24
25	20	20.25	20	25
26	21	21	21	26
27	22	21.75	21.75	27
28	23	22.5	22.5	28
29	24	23.25	23.25	29
30	24	24.25	24	30
31	25	25	25	31
32	26	25.75	25.75	32
33	27	26.5	26.5	33
34	28	27.25	27.25	34
35	28	28.25	28	35
36	29	29	29	36
37	30	29.75	29.75	37

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Fig. 46

※WHEN REMAINDER IS 0, P41 IS SELECTED;
OTHERWISE, P42 IS SELECTED

AA	P41	P42	BB	DISPLAY
38	31	30.5	30.5	38
39	32	31.25	31.25	39
40	32	32.25	32	40
41	33	33	33	41
42	34	33.75	33.75	42
43	35	34.5	34.5	43
44	36	35.25	35.25	44
45	36	36.25	36	45
46	37	37	37	46
47	38	37.75	37.75	47
48	39	38.5	38.5	48
49	40	39.25	39.25	49
50	40	40.25	40	50
51	41	41	41	51
52	42	41.75	41.75	52
53	43	42.5	42.5	53
54	44	43.25	43.25	54
55	44	44.25	44	55
56	45	45	45	56
57	46	45.75	45.75	57
58	47	46.5	46.5	58
59	48	47.25	47.25	59
60	48	48.25	48	60
61	49	49	49	61
62	50	49.75	49.75	62
63	51	50.5	50.5	63
64	52	51.25	51.25	64
65	52	52.25	52	65
66	53	53	53	66
67	54	53.75	53.75	67
68	55	54.5	54.5	68
69	56	55.25	55.25	69
70	56	56.25	56	70
71	57	57	57	71
72	58	57.75	57.75	72
73	59	58.5	58.5	73
74	60	59.25	59.25	74
75	60	60.25	60	75
76	61	61	61	76

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Fig. 47

※WHEN REMAINDER IS 0, P41 IS SELECTED;
OTHERWISE, P42 IS SELECTED

AA	P41	P42	BB	DISPLAY
77	62	61.75	61.75	77
78	63	62.5	62.5	78
79	64	63.25	63.25	79
80	64	64.25	64	80
81	65	65	65	81
82	66	65.75	65.75	82
83	67	66.5	66.5	83
84	68	67.25	67.25	84
85	68	68.25	68	85
86	69	69	69	86
87	70	69.75	69.75	87
88	71	70.5	70.5	88
89	72	71.25	71.25	89
90	72	72.25	72	90
91	73	73	73	91
92	74	73.75	73.75	92
93	75	74.5	74.5	93
94	76	75.25	75.25	94
95	76	76.25	76	95
96	77	77	77	96
97	78	77.75	77.75	97
98	79	78.5	78.5	98
99	80	79.25	79.25	99
100	80	80.25	80	100
101	81	81	81	101
102	82	81.75	81.75	102
103	83	82.5	82.5	103
104	84	83.25	83.25	104
105	84	84.25	84	105
106	85	85	85	106
107	86	85.75	85.75	107
108	87	86.5	86.5	108
109	88	87.25	87.25	109
110	88	88.25	88	110
111	89	89	89	111
112	90	89.75	89.75	112
113	91	90.5	90.5	113
114	92	91.25	91.25	114
115	92	92.25	92	115

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Fig. 48

※WHEN REMAINDER IS 0, P41 IS SELECTED;
OTHERWISE, P42 IS SELECTED

AA	P41	P42	BB	DISPLAY
116	93	93	93	116
117	94	93.75	93.75	117
118	95	94.5	94.5	118
119	96	95.25	95.25	119
120	96	96.25	96	120
121	97	97	97	121
122	98	97.75	97.75	122
123	99	98.5	98.5	123
124	100	99.25	99.25	124
125	100	100.25	100	125
126	101	101	101	126
127	102	101.75	101.75	127
128	103	102.5	102.5	128
129	104	103.25	103.25	129
130	104	104.25	104	130
131	105	105	105	131
132	106	105.75	105.75	132
133	107	106.5	106.5	133
134	108	107.25	107.25	134
135	108	108.25	108	135
136	109	109	109	136
137	110	109.75	109.75	137
138	111	110.5	110.5	138
139	112	111.25	111.25	139
140	112	112.25	112	140
141	113	113	113	141
142	114	113.75	113.75	142
143	115	114.5	114.5	143
144	116	115.25	115.25	144
145	116	116.25	116	145
146	117	117	117	146
147	118	117.75	117.75	147
148	119	118.5	118.5	148
149	120	119.25	119.25	149
150	120	120.25	120	150
151	121	121	121	151
152	122	121.75	121.75	152
153	123	122.5	122.5	153
154	124	123.25	123.25	154

Fig.49

※WHEN REMAINDER IS 0, P41 IS SELECTED;
OTHERWISE, P42 IS SELECTED

AA	P41	P42	BB	DISPLAY
155	124	124.25	124	155
156	125	125	125	156
157	126	125.75	125.75	157
158	127	126.5	126.5	158
159	128	127.25	127.25	159
160	128	128.25	128	160
161	129	129	129	161
162	130	129.75	129.75	162
163	131	130.5	130.5	163
164	132	131.25	131.25	164
165	132	132.25	132	165
166	133	133	133	166
167	134	133.75	133.75	167
168	135	134.5	134.5	168
169	136	135.25	135.25	169
170	136	136.25	136	170
171	137	137	137	171
172	138	137.75	137.75	172
173	139	138.5	138.5	173
174	140	139.25	139.25	174
175	140	140.25	140	175
176	141	141	141	176
177	142	141.75	141.75	177
178	143	142.5	142.5	178
179	144	143.25	143.25	179
180	144	144.25	144	180
181	145	145	145	181
182	146	145.75	145.75	182
183	147	146.5	146.5	183
184	148	147.25	147.25	184

Fig.50A

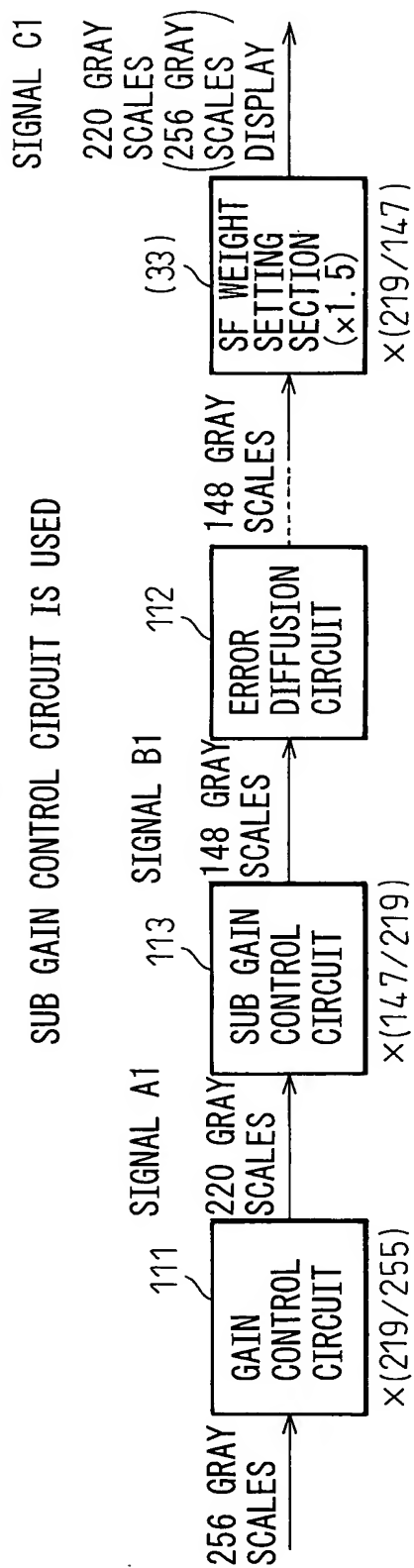


Fig.50B

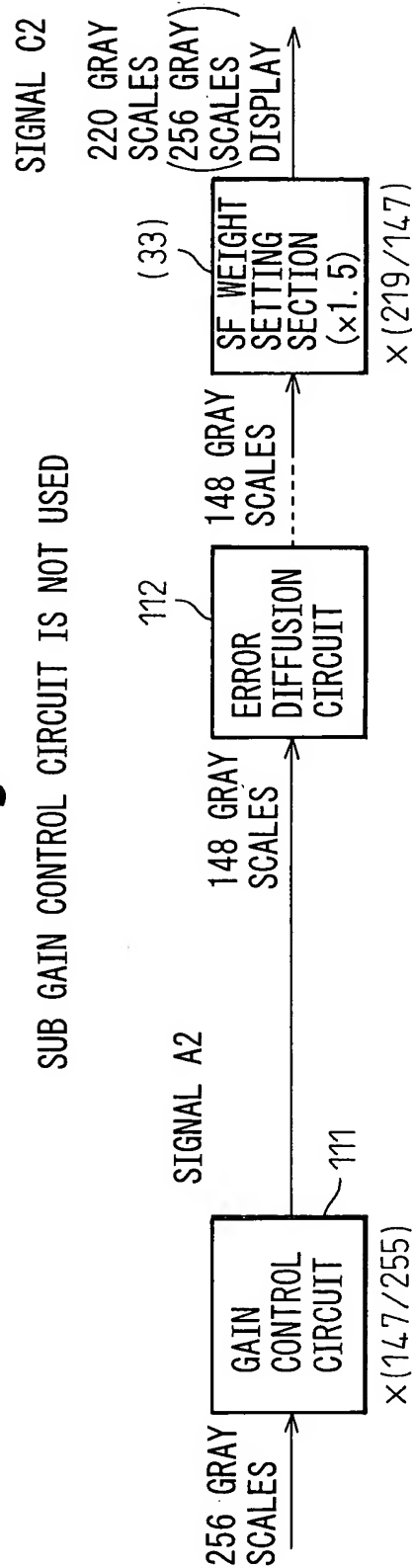


Fig.51

WITH SUB GAIN CONTROL CIRCUIT										WITHOUT SUB GAIN CONTROL CIRCUIT									
256 GRAY SCALES					220 GRAY SCALES					147 GRAY SCALES					ERROR OF OUTPUT SIGNAL ACCURACY				
INPUT SIGNAL					COMPUTATION(1)					COMPUTATION(2)					FRACTIONAL PART				
SIGNAL A1					SIGNAL B1					SIGNAL C1					SIGNAL C2				
FRACTIONAL PART					FRACTIONAL PART					FRACTIONAL PART					FRACTIONAL PART				
1- α					1- α					1- α					1- β				
α					α					α					β				
0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.85	0.85	0.925	0.85	0.85	0.85	0.15	0.85	0.85	0.57	0.57	0.43	0.57	0	0	0.28	0	0.28	
2	1.71	1.71	1.355	1.355	0.355	0.645	1.71	1.71	1.14	0.14	0.86	1.28	0	0.43	0	0.43	0	0.43	
3	2.57	2.57	1.785	1.785	0.785	0.215	2.57	2.57	1.71	0.71	0.29	2.42	0	0.15	0	0.15	0	0.15	
4	3.43	2.43	2.715	2.43	0.43	0.57	3.43	3.43	2.29	0.29	0.71	3.29	0	0.14	0	0.14	0	0.14	
5	4.29	3.29	3.145	3.145	0.145	0.855	4.29	4.29	2.86	0.86	0.14	3.86	0	0.43	0	0.43	0	0.43	
6	5.15	4.15	3.575	3.575	0.575	0.425	5.15	5.15	3.43	0.43	0.57	4.86	0	0.29	0	0.29	0	0.29	
7	6.01	4.01	4.505	4.01	0.01	0.99	6.01	6.01	4	0	0	0	0	6.01	0	6.01	0	6.01	
8	6.87	4.87	4.935	4.87	0.87	0.13	6.87	6.87	4.58	0.58	0.42	6.58	0	0.29	0	0.29	0	0.29	
9	7.72	5.72	5.36	5.36	0.36	0.64	7.72	7.72	5.15	0.15	0.85	7.3	0	0.42	0	0.42	0	0.42	
10	8.58	6.58	5.79	5.79	0.79	0.21	8.58	8.58	5.72	0.72	0.28	8.44	0	0.14	0	0.14	0	0.14	
11	9.44	6.44	6.72	6.44	0.44	0.56	9.44	9.44	6.29	0.29	0.71	9.29	0	0.15	0	0.15	0	0.15	
12	10.3	7.3	7.15	7.15	0.15	0.85	10.3	10.3	6.87	0.87	0.13	9.87	0	0.43	0	0.43	0	0.43	
13	11.16	8.16	7.58	7.58	0.58	0.42	11.16	11.16	7.44	0.44	0.56	10.88	0	0.28	0	0.28	0	0.28	
14	12.02	8.02	8.51	8.02	0.02	0.98	12.02	12.02	8.01	0.01	0.99	12.01	0	0.01	0	0.01	0	0.01	
15	12.88	8.88	8.94	8.88	0.88	0.12	12.88	12.88	8.58	0.58	0.42	12.58	0	0.3	0	0.3	0	0.3	
16	13.74	9.74	9.37	9.37	0.37	0.63	13.74	13.74	9.16	0.16	0.84	13.32	0	0.42	0	0.42	0	0.42	
17	14.6	10.6	9.8	9.8	0.8	0.2	14.6	14.6	9.73	0.73	0.27	14.46	0	0.14	0	0.14	0	0.14	
18	15.45	10.45	10.725	10.45	0.45	0.55	15.45	15.45	10.3	0.3	0.7	15.3	0	0.15	0	0.15	0	0.15	
19	16.31	11.31	11.155	11.155	0.155	0.845	16.31	16.31	10.87	0.87	0.13	15.87	0	0.44	0	0.44	0	0.44	
20	17.17	12.17	11.585	11.585	0.585	0.415	17.17	17.17	11.45	0.45	0.55	16.9	0	0.27	0	0.27	0	0.27	
21	18.03	12.03	12.515	12.03	0.03	0.97	18.03	18.03	12.02	0.02	0.98	18.02	0	0.01	0	0.01	0	0.01	
22	18.89	12.89	12.945	12.89	0.89	0.11	18.89	18.89	12.59	0.59	0.41	18.59	0	0.3	0	0.3	0	0.3	
23	19.75	13.75	13.375	13.375	0.375	0.625	19.75	19.75	13.16	0.16	0.84	19.32	0	0.43	0	0.43	0	0.43	
24	20.61	14.61	13.805	13.805	0.805	0.195	20.61	20.61	13.74	0.74	0.26	20.48	0	0.13	0	0.13	0	0.13	
25	21.47	14.47	14.735	14.47	0.47	0.53	21.47	21.47	14.31	0.31	0.69	21.31	0	0.16	0	0.16	0	0.16	
26	22.32	15.32	15.16	15.16	0.16	0.84	22.32	22.32	14.88	0.88	0.12	21.88	0	0.44	0	0.44	0	0.44	
27	23.18	16.18	15.59	15.59	0.59	0.41	23.18	23.18	15.45	0.45	0.55	22.9	0	0.28	0	0.28	0	0.28	

Fig.52

WITH SUB GAIN CONTROL CIRCUIT										FRACTIONAL PART										WITHOUT SUB GAIN CONTROL CIRCUIT										ERROR OF OUTPUT SIGNAL ACCURACY									
256 GRAY SCALES					220 GRAY SCALES					148 GRAY SCALES					220 GRAY SCALES					147 GRAY SCALES					220 GRAY SCALES					220 GRAY SCALES									
INPUT SIGNAL					COMPUTATION (1)					COMPUTATION (2)					SIGNAL B1					FRACTIONAL PART					SIGNAL C1					FRACTIONAL PART					SIGNAL C2				
SIGNAL A1																																							

75.51

WITH SUB GAIN CONTROL CIRCUIT				WITHOUT SUB GAIN CONTROL CIRCUIT				ERROR OF OUTPUT SIGNAL ACCURACY			
256 GRAY SCALES		148 GRAY SCALES		220 GRAY SCALES		147 GRAY SCALES		220 GRAY SCALES		220 GRAY SCALES	
INPUT SIGNAL	SIGNAL A1	COMPUTATION (1)	SIGNAL B1	FRACTIONAL PART (SIGNAL C1)	FRACTIONAL PART (SIGNAL C2)	FRACTIONAL PART (SIGNAL C1)	FRACTIONAL PART (SIGNAL C2)	FRACTIONAL PART (SIGNAL C1)	FRACTIONAL PART (SIGNAL C2)	FRACTIONAL PART (SIGNAL C1)	FRACTIONAL PART (SIGNAL C2)
		COMPUTATION (2)		α	$1-\alpha$		β	$1-\beta$			
										DISPLAY 1	DISPLAY 2
										A1-C1	A1-C2
84	72.14	48.14	48.57	48.14	0.14	0.86	72.14	48.09	0.09	0.91	72.09
85	73	49	49	49	0	1	73	48.66	0.66	0.34	72.66
86	73.85	49.85	49.425	49.425	0.425	0.575	73.85	49.23	0.23	0.77	73.46
87	74.71	50.71	49.855	49.855	0.855	0.145	74.71	49.81	0.81	0.19	74.62
88	75.57	50.57	50.785	50.57	0.57	0.43	75.57	50.38	0.38	0.62	75.38
89	76.43	51.43	51.215	51.215	0.215	0.785	76.43	50.95	0.95	0.05	75.95
90	77.29	52.29	51.645	51.645	0.645	0.355	77.29	51.52	0.52	0.48	77.04
91	78.15	52.15	52.575	52.15	0.15	0.85	78.15	52.1	0.1	0.9	78.1
92	79.01	53.01	53.005	53.005	0.005	0.995	79.01	52.67	0.67	0.33	78.67
93	79.87	53.87	53.435	53.435	0.435	0.565	79.87	53.24	0.24	0.76	79.48
94	80.72	54.72	53.86	53.86	0.86	0.14	80.72	53.81	0.81	0.19	80.62
95	81.58	54.58	54.79	54.58	0.58	0.42	81.58	54.39	0.39	0.61	81.39
96	82.44	55.44	55.22	55.22	0.22	0.78	82.44	54.96	0.96	0.04	81.96
97	83.3	56.3	55.65	55.65	0.65	0.35	83.3	55.53	0.53	0.47	83.06
98	84.16	56.16	56.58	56.16	0.16	0.84	84.16	56.1	0.1	0.9	84.1
99	85.02	57.02	57.01	57.01	0.01	0.99	85.02	56.68	0.68	0.32	84.68
100	85.88	57.88	57.44	57.44	0.44	0.56	85.88	57.25	0.25	0.75	85.5
101	86.74	58.74	57.87	57.87	0.87	0.13	86.74	57.82	0.82	0.18	86.64
102	87.6	58.6	58.8	58.6	0.6	0.4	87.6	58.4	0.4	0.6	87.4
103	88.45	59.45	59.225	59.225	0.225	0.775	88.45	58.97	0.97	0.03	87.97
104	89.31	60.31	59.655	59.655	0.655	0.345	89.31	59.54	0.54	0.46	89.08
105	90.17	60.17	60.585	60.17	0.17	0.83	90.17	60.11	0.11	0.89	90.11
106	91.03	61.03	61.015	61.015	0.015	0.985	91.03	60.69	0.69	0.31	90.69
107	91.89	61.89	61.445	61.445	0.445	0.555	91.89	61.26	0.26	0.74	91.52
108	92.75	62.75	61.875	61.875	0.875	0.125	92.75	61.83	0.83	0.17	92.66
109	93.61	62.61	62.805	62.61	0.61	0.39	93.61	62.4	0.4	0.6	93.4
110	94.47	63.47	63.235	63.235	0.235	0.765	94.47	62.98	0.98	0.02	93.98
111	95.32	64.32	63.66	63.66	0.66	0.34	95.32	63.55	0.55	0.45	95.1

WITH SUB GAIN CONTROL CIRCUIT										WITHOUT SUB GAIN CONTROL CIRCUIT									
256 GRAY SCALES					220 GRAY SCALES					220 GRAY SCALES					220 GRAY SCALES				
INPUT SIGNAL (SIGNAL A1)					COMPUTATION (1)					FRACTIONAL PART					FRACTIONAL PART				
					SIGNAL B1					SIGNAL C1					SIGNAL C2				
					COMPUTATION (2)					1- α					1- β				
					α					β					A1-C1				
					1- α					1- β					A1-C2				
112	96.18	64.18	64.59	64.18	0.18	0.82	96.18	64.12	0.12	0.88	96.12	0	0.06						
113	97.04	65.04	65.02	65.02	0.02	0.98	97.04	64.69	0.69	0.31	96.69	0	0.35						
114	97.9	65.9	65.45	65.45	0.45	0.55	97.9	65.27	0.27	0.73	97.54	0	0.36						
115	98.76	66.76	65.88	65.88	0.88	0.12	98.76	65.84	0.84	0.16	98.68	0	0.08						
116	99.62	66.62	66.81	66.62	0.62	0.38	99.62	66.41	0.41	0.59	99.41	0	0.21						
117	100.48	67.48	67.24	67.24	0.24	0.76	100.48	66.98	0.98	0.02	99.98	0	0.5						
118	101.34	68.34	67.67	67.67	0.67	0.33	101.34	67.56	0.56	0.44	101.12	0	0.22						
119	102.2	68.2	68.6	68.2	0.2	0.8	102.2	68.13	0.13	0.87	102.13	0	0.07						
120	103.05	69.05	69.025	69.025	0.025	0.975	103.05	68.7	0.7	0.3	102.7	0	0.35						
121	103.91	69.91	69.455	69.455	0.455	0.545	103.91	69.27	0.27	0.73	103.54	0	0.37						
122	104.77	70.77	69.885	69.885	0.885	0.115	104.77	69.85	0.85	0.15	104.7	0	0.07						
123	105.63	70.63	70.815	70.63	0.63	0.37	105.63	70.42	0.42	0.58	105.42	0	0.21						
124	106.49	71.49	71.245	71.245	0.245	0.755	106.49	70.99	0.99	0.01	105.99	0	0.5						
125	107.35	72.35	71.675	71.675	0.675	0.325	107.35	71.56	0.56	0.44	107.12	0	0.23						
126	108.21	72.21	72.605	72.21	0.21	0.79	108.21	72.14	0.14	0.86	108.14	0	0.07						
127	109.07	73.07	73.035	73.035	0.035	0.965	109.07	72.71	0.71	0.29	108.71	0	0.36						
128	109.92	73.92	73.46	73.46	0.46	0.54	109.92	73.28	0.28	0.72	109.56	0	0.36						
129	110.78	74.78	73.89	73.89	0.89	0.11	110.78	73.85	0.85	0.15	110.7	0	0.08						
130	111.64	74.64	74.82	74.64	0.64	0.36	111.64	74.43	0.43	0.57	111.43	0	0.21						
131	112.5	75.5	75.25	75.25	0.25	0.75	112.5	75	0	1	112	0	0.5						
132	113.36	76.36	75.68	75.68	0.68	0.32	113.36	75.57	0.57	0.43	113.14	0	0.22						
133	114.22	76.22	76.61	76.22	0.22	0.78	114.22	76.14	0.14	0.86	114.14	0	0.08						
134	115.08	77.08	77.04	77.04	0.04	0.96	115.08	76.72	0.72	0.28	114.72	0	0.36						
135	115.94	77.94	77.47	77.47	0.47	0.53	115.94	77.29	0.29	0.71	115.58	0	0.36						
136	116.8	78.8	77.9	77.9	0.9	0.1	116.8	77.86	0.86	0.14	116.72	0	0.08						
137	117.65	78.65	78.825	78.65	0.65	0.35	117.65	78.43	0.43	0.57	117.43	0	0.22						
138	118.51	79.51	79.255	79.255	0.255	0.745	118.51	79.01	0.01	0.99	118.02	0	0.49						
139	119.37	80.37	79.685	79.685	0.685	0.315	119.37	79.58	0.58	0.42	119.16	0	0.21						

Fig.56

WITH SUB GAIN CONTROL CIRCUIT										WITHOUT SUB GAIN CONTROL CIRCUIT									
256 GRAY SCALES					148 GRAY SCALES					147 GRAY SCALES					220 GRAY SCALES				
INPUT SIGNAL					COMPUTATION (1)					COMPUTATION (2)					FRACTIONAL PART				
SIGNAL A1					SIGNAL B1					SIGNAL C1					SIGNAL C2				
					α					$1-\alpha$					β				
															$1-\beta$				

Fig.58

WITH SUB GAIN CONTROL CIRCUIT				FRACTIONAL PART				WITHOUT SUB GAIN CONTROL CIRCUIT				ERROR OF OUTPUT SIGNAL ACCURACY			
256 GRAY SCALES				148 GRAY SCALES				147 GRAY SCALES				220 GRAY SCALES			
INPUT SIGNAL	SIGNAL A1	COMPUTATION(1)		SIGNAL B1	FRACTIONAL PART		SIGNAL C1	SIGNAL C2	FRACTIONAL PART		SIGNAL A2	DISPLAY 1	A1-C1	DISPLAY 2	A1-C2
		COMPUTATION(2)			α	$1-\alpha$			β	$1-\beta$					
196	168.32	112.32	112.66	112.32	0.32	0.68	168.32	112.21	0.21	0.79	168.21	0	0	0.11	0.11
197	169.18	113.18	113.09	113.09	0.09	0.91	169.18	112.79	0.79	0.21	168.79	0	0	0.39	0.39
198	170.04	114.04	113.52	113.52	0.52	0.48	170.04	113.36	0.36	0.64	169.72	0	0	0.32	0.32
199	170.9	114.9	113.95	113.95	0.95	0.05	170.9	113.93	0.93	0.07	170.86	0	0	0.04	0.04
200	171.76	114.76	114.88	114.76	0.76	0.24	171.76	114.5	0.5	0.5	171.5	0	0	0.26	0.26
201	172.62	115.62	115.31	115.31	0.31	0.69	172.62	115.08	0.08	0.92	172.16	0	0	0.46	0.46
202	173.48	116.48	115.74	115.74	0.74	0.26	173.48	115.65	0.65	0.35	173.3	0	0	0.18	0.18
203	174.34	116.34	116.67	116.34	0.34	0.66	174.34	116.22	0.22	0.78	174.22	0	0	0.12	0.12
204	175.2	117.2	117.1	117.1	0.1	0.9	175.2	116.8	0.8	0.2	174.8	0	0	0.4	0.4
205	176.05	118.05	117.53	117.53	0.53	0.47	176.05	117.37	0.37	0.63	175.74	0	0	0.31	0.31
206	176.91	118.91	117.96	117.96	0.96	0.04	176.91	117.94	0.94	0.06	176.88	0	0	0.03	0.03
207	177.77	118.77	118.89	118.77	0.77	0.23	177.77	118.51	0.51	0.49	177.51	0	0	0.26	0.26
208	178.63	119.63	119.32	119.32	0.32	0.68	178.63	119.09	0.09	0.91	178.18	0	0	0.45	0.45
209	179.49	120.49	119.75	119.75	0.75	0.25	179.49	119.66	0.66	0.34	179.32	0	0	0.17	0.17
210	180.35	120.35	120.68	120.35	0.35	0.65	180.35	120.23	0.23	0.77	180.23	0	0	0.12	0.12
211	181.21	121.21	121.11	121.11	0.11	0.89	181.21	120.8	0.8	0.2	180.8	0	0	0.41	0.41
212	182.07	122.07	121.54	121.54	0.54	0.46	182.07	121.38	0.38	0.62	181.76	0	0	0.31	0.31
213	182.92	122.92	121.96	121.96	0.96	0.04	182.92	121.95	0.95	0.05	182.9	0	0	0.02	0.02
214	183.78	123.78	122.89	122.89	0.89	0.11	183.78	122.52	0.52	0.48	183.52	0	0	0.26	0.26
215	184.64	124.64	123.32	123.32	0.32	0.68	184.64	123.09	0.09	0.91	184.18	0	0	0.46	0.46
216	185.5	125.5	123.75	123.75	0.75	0.25	185.5	123.67	0.67	0.33	185.34	0	0	0.16	0.16
217	186.36	126.36	124.68	124.68	0.68	0.32	186.36	124.24	0.24	0.76	186.24	0	0	0.12	0.12
218	187.22	127.22	125.11	125.11	0.11	0.89	187.22	124.81	0.81	0.19	186.81	0	0	0.41	0.41
219	188.08	128.08	125.54	125.54	0.54	0.46	188.08	125.38	0.38	0.62	187.76	0	0	0.32	0.32
220	188.94	128.94	125.97	125.97	0.97	0.03	188.94	125.96	0.96	0.04	188.92	0	0	0.02	0.02
221	189.8	129.8	126.9	126.9	0.8	0.2	189.8	126.53	0.53	0.47	189.53	0	0	0.27	0.27
222	190.65	129.65	127.33	127.33	0.33	0.67	190.65	127.1	0.1	0.9	190.2	0	0	0.45	0.45
223	191.51	129.51	127.76	127.76	0.76	0.24	191.51	127.67	0.67	0.33	191.34	0	0	0.17	0.17

Fig.59

WITH SUB GAIN CONTROL CIRCUIT				FRACTIONAL PART				WITHOUT SUB GAIN CONTROL CIRCUIT				ERROR OF OUTPUT SIGNAL ACCURACY			
256 GRAY SCALES				220 GRAY SCALES				147 GRAY SCALES				220 GRAY SCALES			
INPUT SIGNAL				COMPUTATION (1)				COMPUTATION (2)				FRACTIONAL PART			
SIGNAL A1				SIGNAL B1				SIGNAL C1				SIGNAL C2			
				α				$1-\alpha$				β			
				$1-\beta$				$1-\beta$				$1-\beta$			
				DISPLAY 1				DISPLAY 2				A1-C1			
				A1-C2				A1-C2				A1-C2			
224	192.37	128.37	128.69	128.37	0.37	0.63	192.37	128.25	0.25	0.75	192.25	0	0.12		
225	193.23	129.23	129.12	129.115	0.115	0.885	193.23	128.82	0.82	0.18	192.82	0	0.41		
226	194.09	130.09	129.55	129.545	0.545	0.455	194.09	129.39	0.39	0.61	193.78	0	0.31		
227	194.95	130.95	129.98	129.975	0.975	0.025	194.95	129.96	0.96	0.04	194.92	0	0.03		
228	195.81	130.81	130.91	130.81	0.81	0.19	195.81	130.54	0.54	0.46	195.54	0	0.27		
229	196.67	131.67	131.34	131.335	0.335	0.665	196.67	131.11	0.11	0.89	196.22	0	0.45		
230	197.52	132.52	131.76	131.76	0.76	0.24	197.52	131.68	0.68	0.32	197.36	0	0.16		
231	198.38	132.38	132.69	132.38	0.38	0.62	198.38	132.25	0.25	0.75	198.25	0	0.13		
232	199.24	133.24	133.12	133.12	0.12	0.88	199.24	132.83	0.83	0.17	198.83	0	0.41		
233	200.1	134.1	133.55	133.55	0.55	0.45	200.1	133.4	0.4	0.6	199.8	0	0.3		
234	200.96	134.96	133.98	133.98	0.98	0.02	200.96	133.97	0.97	0.03	200.94	0	0.02		
235	201.82	134.82	134.91	134.82	0.82	0.18	201.82	134.54	0.54	0.46	201.54	0	0.28		
236	202.68	135.68	135.34	135.34	0.34	0.66	202.68	135.12	0.12	0.88	202.24	0	0.44		
237	203.54	136.54	135.77	135.77	0.77	0.23	203.54	135.69	0.69	0.31	203.38	0	0.16		
238	204.4	136.4	136.7	136.4	0.4	0.6	204.4	136.26	0.26	0.74	204.26	0	0.14		
239	205.25	137.25	137.13	137.125	0.125	0.875	205.25	136.83	0.83	0.17	204.83	0	0.42		
240	206.11	138.11	137.56	137.555	0.555	0.445	206.11	137.41	0.41	0.59	205.82	0	0.29		
241	206.97	138.97	137.99	137.985	0.985	0.015	206.97	137.98	0.98	0.02	206.96	0	0.01		
242	207.83	138.83	138.92	138.83	0.83	0.17	207.83	138.55	0.55	0.45	207.55	0	0.28		
243	208.69	139.69	139.35	139.345	0.345	0.655	208.69	139.12	0.12	0.88	208.24	0	0.45		
244	209.55	140.55	139.78	139.775	0.775	0.225	209.55	139.7	0.7	0.3	209.4	0	0.15		
245	210.41	140.41	140.71	140.41	0.41	0.59	210.41	140.27	0.27	0.73	210.27	0	0.14		
246	211.27	141.27	141.14	141.135	0.135	0.865	211.27	140.84	0.84	0.16	210.84	0	0.43		
247	212.12	142.12	141.56	141.56	0.56	0.44	212.12	141.41	0.41	0.59	211.82	0	0.3		
248	212.98	142.98	141.99	141.99	0.99	0.01	212.98	141.99	0.99	0.01	212.98	0	0		
249	213.84	142.84	142.92	142.84	0.84	0.16	213.84	142.56	0.56	0.44	213.56	0	0.28		
250	214.7	143.7	143.35	143.35	0.35	0.65	214.7	143.13	0.13	0.87	214.26	0	0.44		
251	215.56	144.56	143.78	143.78	0.78	0.22	215.56	143.7	0.7	0.3	215.4	0	0.16		

[illegible]